STEEL

The Metalworking Weekly

EDITORIAL INDEX

VOLUME 152

January 1 to June 30, 1963

Subject Index 2
Company Index 14

THE PENTON PUBLISHING COMPANY

Penton Building, Cleveland 13, Ohio

SUBJECT INDEX

A

Abrasives:
Heavy duty machining with abrasives, conference topic, 4/8, p.25

Africa:
Randall defends mine ownership in Africa, 4/22, p.210
South Africa welcomes U. S. manufacturers, 4/1, p.26

Aircraft:
Aluminum forgings for jet airfreighter, 2/25, p.66
Douglas launches DC-9 compact plane on civilian market, 4/15, p.29
DC-9 jet airliner, successor to DC-3, 5/6, p.92
DC-9 jets, financing plan (Douglas, subcontractors), 5/20, p.31
Executive planes made in Australia, 5/27, p.134
Helicopter—one seater powered by gas turbine, TO, 6/3, p.20
Slit wing—reduces air friction (Northrop LFC principle), 6/10, p.98
Supersonic commercial transport timetable, 1/28, p.18
Trisonic transport prototype, 2000-mile-an-hour, 6/24, p.19

Air Force:
Ultrasonic vibrations aid grinding (research project), 5/20, p.56
Weapons lab, N. Mex., 5/6, p.33

Air Pollution:
Canadian firm's air pollution control system, 4/8, p.27
U. S. steel closes California facility, fails to install air pollution equipment, 6/17, p.33

Alberta Research Council:
Low grade ore body processed, 1/21, p.50

Alexander Hamilton Institute:
Consumer debt nears danger point, 5/27, p.18
GNP forecast for year, 6/3, p.17

Alloys:
AISI 4130 forged cylinder caps, 1/28, p.55
Alloy for nuclear service, Pyromet 600, 6/10, p.145
Alloy (Hastelloy X) anchors hold furnace refractory, 6/17, p.74
Alloy plus stainless, composite for propeller shaft for outboard motor, 5/27, p.86
Alloys take minus 423° F, TO, 6/3, p.20
Aluminum alloy, X7039, high strength, 2/25, p.30
Aluminum casting alloys new at Alcoa (354-359), and structural alloys (6070-6061), 5/27, p.98
Brazing alloy-silver for aircraft, 2/18, p.58
Cobalt base alloy SM 322 new, 1/28, p.30
Columbium-vanadium INX 70, 6/3, p.29
Rene 41, heat resistant, machinability, 2/25, p.56
Tantalum alloy (T-111) new at Westinghouse, high temp. work, 1/14, p.26
Tantalum now on aerospace list, 2/11, p.90

Aluminum:
1965 and 1970 consumption forecast, 2/18, p.18
1962 aluminum output all-time high, 1/28, p.72
Aluminum from clay, Anaconda extracting process, 5/27, p.29
Aluminum electrical steels, TO, 6/10, p.20
Aluminum ingot prices, will they increase? 5/27, p.27
Aluminum pellets to sheet in one step (Reynolds new process), 4/1, p.39
Wire extruded (hydrostatic) from aluminum billet stock, 3/4, p.65
Where aluminum markets are, 6/24, p.30

Aluminum Plants:
Aluminium Ltd. acquires fabricating plants in U. S., 2/18, p.33
Aluminum reroll plant, Oswego, N. Y. (owners), 2/18, p.33
Continuous casting aluminum mill for Decatur, Ala. planned by Fruehauf and Hunter Eng., 3/11, p.33
Swiss affiliate (CAC) readies Tennessee reduction plant, 2/18, p.33

American Foundrymen's Society:
Castings congress, Slichter AFS president, manual of diecasting procedures prepared, 6/3, p.33

American Gas Assn.:
Moves headquarters, B, 4/15, p.33

American Gear Manufacturers Assn.:
Conference, elections: Ball president, 6/10, p.29
Connell Award to go to Schneider (Falk) in June meeting, 5/13, p.35
Elects, B, 6/3, p.35

American Institute for Imported Steel Inc.:
Graubard: Antidumping amendment could kill international commerce, 6/17, p.117

American Institute of Mining, Metallurgical & Petroleum Engineers:
Meeting report: Self-fluxing pellet production, 3/4, p.62
Mining symposium (iron ore slurry pipeline), 1/28, p.30

American Institute of Steel Construction:
Fabricated structural steel sales forecast, 1/7, p.259

American Iron & Steel Institute:
Aim at world competition (meeting report), world production and steel mills, 5/27, p.23
Dr. Suits (GE) gives Schwab Memorial Lecture: Behind in metals research, 5/27, p.24
Conveyor belt wins design award, 3/18, p.114
Hourly employment costs, 1940 to 1961, 2/25, p.17
Orientated electrical steel, M-4, 4/22, p.140
Oxygen processes and continuous casting, highlights of technical sessions, 6/3, p.71
Roche, president, 4/15, p.19
Stainless steel producers listed, 3/18, p.104 and 4/1, p.46
Steel industry resurgence, meeting report (editorial), 5/27, p.15
Steele (Wheeling) stresses manpower needs, 5/27, p.24

American Machine Tool Distributors' Assn.:
Invites participation by industry, 4/15, p.18
Meeting report, forecast, 4/15, p.26

American Management Assn.:
Packaging conference report: Metal can on way out, composites use, 4/29, p.25
Personnel conference (industrial relations executives role measured in company profitability), 2/18, p.26

American Society for Abrasives:
Conference topic, heavy duty machining with abrasives, 4/8, p.25

American Society of Mechanical Engineers:
Design engineering conference progress reports, 5/13, p.68
Design show, new ideas, techniques, 5/27, p.25

American Society for Metals:
Announces Western Metal Show to be held yearly, 4/1, p.26
Announces co-op program with STME for additional shows, Brussels and West Coast, 5/27, p.91
ASM Metals/Materials Show, new name for Metal Show, 5/27, p.91
Computer - searching literature: Who should use the service (Freeman report), 3/4, p.58

American Society for Quality Control:
Elects president, B, 6/3, p.35
Feigenbaum: Quality control costs lowered by 'prevention work,' 5/27, p.98
Feigenbaum: Systems engineering, route to better quality, 6/3, p.29
Stresses quality information equipment, 6/10, p.119

American Society for Testing & Materials:
Adds metric data to publications, 3/11, p.31

American Society of Tool & Manufacturing Engineers:
Chicago show, speakers, 5/6, p.27
Machining progress report by Kronenberg (consultant), 5/13, p.20
Price (Westinghouse) gets progress award, 5/6, p.27
Research grants for manufacturing study, 3/11, p.67
Tool selection study workshop, B, 6/24, p.35

American Supply & Machinery Manufacturers' Assn.:
Price (president) takes aim at profit improvement, 6/10, p.29

American Welding Society:
Brazing standard established, TO, 6/3, p.20
President foresees welding growth (Show features), 4/15, p.62

American Zinc Institute:
Elections, Young president, 5/13, p.33

Analysts:
N. Y. security analysts meet: Man on moon would stimulate business, 4/29, p.27

Appliances:
Clothes dryers, industrywide sales promotion campaign, 2/4, p.47
Electrical appliance sales 1st quarter, 5/13, p.18
Washer, dryer shipments, 5/6, p.19
Cryogenic refrigerator — 50 lb. (GE), 1/21, p.17
Cryogenic refrigerator runs four years, 2/18, p.20
Laundry appliance sales, 4/1, p.19
Refrigerators-thermoelectric, 2/25, p.62

Area Development:
ARA aids depressed communities (Roblin-Seaway continuous casting mill at Dunkirk, N. Y.), 4/1, p.57
ARA and SBA changes aid small-medium firms land government contracts, 4/15, p.93
Submerged land in Lake Michigan reclaimed for steelworks by U. S. Steel, 5/6, p.18
Urban renewal spending, 4/29, p.18

Argonne National Laboratory:
Advanced computer installed, 3/11, p.20

Armour Research: See Illinois Inst.

Astronautics: See Space Materials

Atomic Energy:
AEC cites byproducts of A-Plane research, 4/1, p.61
AEC plans high energy accelerator, TO, 3/11, p.20
Antarctic atom plant, TO, 6/10, p.20
Atom smasher aided by superconductivity, Stanford U., 5/13, p.86
Coal mining, clean nuclear devices, 5/13, p.76
Ion beam controls amounts of 'impurity' atoms, 3/25, p.20
Neutron activation analysis systems (Kaman), 6/10, p.103
Nuclear fuel element, new and cheaper, 4/8, p.20
Nuclear fuel elements at Sylcor provide nuclear test flexibility, 5/6, p.87
Nuclear power by year 2000 will take over electrical, 2/11, p.19
Price (Westinghouse): Miraculous developments, 4/8, p.18
Pulse nuclear reactor readied at Univ. of Buffalo, 3/25, p.20.
Shipping containers for spent nuclear fuel elements, 6/10, p.115

Auditing:
Audit your purchasing for greater profits, 1/7, p.141

Australia:
Aluminum import licensing system, 4/1, p.97
Aluminum ingot price cut, 4/8, p.104
Annual leave increases makes world's lowest work hours, 5/13, p.145
Auto sales up, 4/15, p.121
Automakers expansion spending, 4/29, p.87
Bauxite lease, 4/22, p.208
Motor vehicles registrations, 3/11, p.97
Tariff laws force foreign builders to establish subsidiaries in Australia, 1/21, p.81
Tourists now top ten exchange earners, 1/21, p.81
Victa makes executive airplanes, 5/27, p.134

Automation:
AMF—search for things to automate, 2/4, p.35
Automation speeds auto door lock assembly, 5/6, p.91
Brazing automation (Ohio water valve firms), 2/25, p.48
How to automate a steel plant (English computer system), 1/14, p.42
Japanese carmaker automates production control system, 6/10, p.100

Automotive:
1963: Automakers foresee '62 profit pace, 2/18, p.28
1963: How automakers will hold price line, 1/7, p.281
1963: Detroit confirms trend toward bigger cars, 3/11, p.89
1963: Detroit's thinking about (disc brakes vs sintered linings, sealed cooling systems, plastic uses), 3/4, p.95
1963 pace influences—what metalworking managers expect in 2nd half, 6/24, p.62
1963 sales add fillip to metals consumption, 6/17, p.109
1964 models take shape, 2/18, p.91
1964 sales outlook stirs competition, 4/29, p.79
1972: 100 million vehicles plus on road, 3/4, p.18
Aluminum radiators, 3/4, p.95
Aluminum trim on Dodge race cars, 2/18, p.92
Aluminum usage by 1967, 3/18, p.17
Battery powered delivery trucks, 4/8, p.96
Capital outlays may accelerate in '63, 1/21, p.71
Capital spending, 6/3, p.94
Car production record (3 millionth '63 car), 1/28, p.27
Car production (five companies) per cent breakdown, 4/1, p.24
Cars shipped overseas '62, 2/11, p.165
Cargo trailers, 'bus' trains fly and float (Dodge Truck forecasts), 5/20, p.92
Carmel (made in Israel), undercuts prices, 5/6, p.130
Castings, thin wall, 3/18, p.169
Castings of nodular iron, 3/18, p.169
Chevrolet introduces Corvair 'idea car,' 4/22, p.200
Chevrolet to offer five lines in '64, 4/22, p.199
Chevrolet uses more nodular iron, 3/18, p.168

Chevrolet to use more diecast zinc grilles, 3/18, p.170
Chrysler's new team clicks in comeback (earnings, new developments), 2/4, p.75
Chrysler buys controlling interest in Simca, 2/4, p.75
Chrysler engine plant: 'Practical' machining pays off, 3/25, p.169
Chrysler's turbine car tests, 5/13, p.138
Chrysler's turbine car (pic): Consumers to help decide future, 5/20, p.29
Compacts in '64 are longer, 2/18, p.92
Contract talks (see Labor)
Convertibles: Style conscious buyers accelerate sales, 4/15, p.113
Corrosion study at Ford, 'probable' conclusions, 1/14, p.76
Diesel fuel combustion system (Hercules), 6/24, p.112
Disc brakes vs sintered linings, 3/4, p.95
Disc brakes, AMC test, 4/29, p.80
Door lock assembly, automation, 5/6, p.91
Dual exhaust systems shift back, 6/24, p.111
Exhaust system (chambered pipe) will displace muffler, 3/4, p.17 and 3/11, p.90
Federal revenues from taxes, automotive products, 3/25, p.
Fiat price cut in Germany, 1/21, p.72
Fiberglas use predicted, 4/1, p.90
Ford-Cologne uses powder metal parts, 1/28, p.95
Ford showing at Monaco, 1/14, p.75
Foreign carmakers in style trap (Fiat, Renault, Morris Mini-Minor, etc.), 6/3, p.93
Foreign cars boost stainless usage, 2/11, p.165
Foreign producers expected to cut prices, 1/21, p.72
Foreign sales in U. S. predicted, 4/8, p.103
Gas turbines, Rover Co. Ltd., 1/28, p.88
GM-AC Spark Plug, magnesium diecasting tips, 5/20, p.91
GM: Antitrust probe, 5/27, p.125
GM's Barr looks at future engineering, 4/1, p.89
Horsepower (AMC warns against competitive race), 1/28, p.88
Hydrostatic drive, forecast, TO, 5/20, p.20
Iron powder use, 1/28, p.17
Japanese conveyor assembly line (automated production control), 6/10, p.100
Lead, zinc consumption heavy, 5/6, p.115
Magnesium aluminum alloy for '64 cars, 3/11, p.18
Magnesium diecasting tips, auto consumption, AC Spark Plug use, 5/20, p.91
Mardi-Car, golf course-supermarket use, 6/17, p.110
Materials battle rages on '64 designs (plastics vs metals), 1/28, p.87
Mercedes-Benz 230 SL replaces touring sports car, 4/29, p.80
Metalmen revise '63 estimates, 6/17, p.109
Noise and vibration test (GM), 1/7, p.281
Plastic, new uses, 3/4, p.96
Plastics potential, 4/1, p.90
Plastic chrome plated parts for '64, 4/22, p.200
Plastic laminate for auto-truck parts, 5/20, p.55
Quality capability studies-machine tools, 5/13, p.137
Renault (Grob): U. S. makers of auto parts ignore importers (good markets), 2/25, p.29
Renault's new automatic shift, 4/22, p.199
Russia's 1st compact, 2/18, p.99
Seat belts standard in '64? 1/21, p.72
Smog control 'afterburner' tested in Calif., 1/21, p.72
Smog burner (AMF), 5/6, p.89
Smog control system (Canadian firm), 4/8, p.27
Sports cars, larger market looms (Corvair revamped), 6/24, p.111
Stainless coat for auto trim (Du Pont), 3/18, p.25
Stainless trim corrosion test—10 minute, (Union Carbide), 1/28, p.58
Steel consumption-percent (table), 4/8, p.96
Steel increase could cause $50 boost in '64 cars, 4/22, p.27
Stretch forming, then stamping into shape, 5/13, p.138
Studebaker maps drive to make cars pay off (earnings report), 2/25, p.93
Suppliers ignore good market, importers (Renault's Grob asserts), 2/25, p.29
Tomorrow's car: Auto Familia (Studebaker), 2/11, p.166
Turbine engines on way (Ford agrees), 5/6, p.121
Turbine engines, metals usage, 6/17, p.110
Volkswagen gap presses for roof stamping, 2/4, p.27
Volvo develops turbine transmission, 1/28, p.88
Warranties battle: How far will it go? 4/8, p.95
Warranty costs reduced with quality capability studies, 5/13, p.137
Windshields to adjust to light, 3/18, p.170
World auto production, 2/18, p.99
World producers in '62, 3/4, p.103

Awards:
AISI design award (conveyor belt), 3/18, p.114
E-Flag award to F. J. Stokes Corp., 4/15, p.121
New Jersey Zinc's awards: Copper powder auto rectifier base, 4/15, p.31
STEEL award from Freedom Foundation, 2/25, p.17

B

Balance of Payments:
U. S. deficit in 1st quarter '62, 3/4, p.103

Bars:
Automatic bar classifier detects seams, 5/27, p.31
Bethlehem's new 8 in. bar mill 'Pacesetter' at Johnstown, Pa., 6/3, p.33
Concrete reinforcing steel bar shipments, 1/7, p.260
Merchant steel bar shipments, 1/7, p.260
Super Surface bar, LaSalle Steel developments, 5/27, p.25

Battelle Memorial Institute:
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Rolls heated to red heat to make strips, 3/18, p.20
Tungsten sheet fabrication data, 3/4, p.20

Bearings, Bushings:
Fretting corrosion in bearings cut by liquid plastic sealant, 1/28, p.48
Hydrostatic bearing (rolling mill) uses high viscosity lubricant, 5/20, p.71
Linear roller bearing, 5/27, p. 25
Rotech Inc., large diameter wire race bearings, 5/27, p.26
SKF lab seeks answers to bearing users problems, 6/17, p.33

Belgium:
Economic expansion program, 1/28, p.96
Tax law lenient, 1/14, p.83; indirect tax system, 3/18, p.178

Beryllium:
Autonetics Div. reports instruments made of beryllium, stability and accuracy, 6/17, p.85

Big New Markets: See Steel (Features)

Biomedical Markets:
Bio-Medical Engineering conference: Imagination pays off, 4/15, p.91

Blast Furnaces: See Steelmaking

Blasting: See Cleaning, Blasting

Bonding:
Bonding tape (rejected) reclaimed for forming material, 6/24, p.81
Ceramic-metal bond, 3/18, p.111
Chemical bond strengthens fastener (Jay-Lok), 5/6, p.31
Graphite bonding process (Tokyo Science Inst.), 1/14, p.20

Books, Booklets:
Brittleness of steel, 4/1, p.118
Collective bargaining in Sweden, 2/25, p.122
Economics, an analytical approach, 4/8, p.124
Guide to tolerances and finishes, 2/18, p.56
Kaiser progress sharing booklet, 1/14, p.23
Manufacturing engineering, 4/8, p.124
Materials handbook for managers, 3/11, p.118
NAPA book, Evaluation of Supplier Performance, 4/8, p.68
NASA fact book (parts list), 3/4, p.72
Overseas investment handbook, 2/18, p.99
Parkinson's In-laws and out-laws, 2/25, p.104
Physical chemistry of iron and steelmaking, 2/18, p.120
Powder metallurgy progress, 3/25, p.202
Spain, economic development of, 1/28, p.115
Supervisory action, front-line management, 2/18, p.120
USW 'Shorter Work Week', 1/28, p.18
Welding handbook, 3/25, p.202

Brazing:
Automated brazing at two Ohio water valve firms, 2/25, p.49
Brazing with electron beam; Aussies try spray braze, 4/29, p.20
Outlook for new methods, materials, 4/15, p.68

Bridges: See Construction

British Iron & Steel Research Assn.:
Aluminum electrical steels, TO, 6/10, p.20
Electroslag remelting progress, 1/14, p.20
High purity iron made in 40 minutes, 3/11, p.64
Waste heat from furnace to generate electric power? 6/10, p.170

British Nonferrous Metals Research Assn.:
Transformer safety by employing copper-cold worked, 3/4, p.20

Business & Defense Services Adm.:
Annual forecast reflects business confidence, 2/11, p.17
Exports up in 8 categories, 3/25, p.177
Scrap industry problems studied, 3/11, p.33
Surveys numerically controlled tools, 6/3, p.18

Business (Economy):
1963 key to success held by industry itself (domestic-foreign investments), 1/7, p.17
1963 issues key to outlook (tax legislation, gov't-business relations, balance of payments), 1/21, p.75
How JFK and advisers (Heller) propose to spur economy (tax cut, R&D, wage-price guideposts), 1/28, p.25
Business cycles (Dawson, Nat'l City Bank), 2/4, p.79
Consumer-government buying will keep business high through '63 (Gainsbrugh-NICB), 6/10, p.25
Consumers and jobs, how to create, 6/17, p.56
Economic growth linked to high rate of fixed investment (international report) OECD, 2/4, p.52
GE's McCune: Business incentives need booster, 4/15, p.124
Industrial pace matches record, 5/13, p.141
Metalworking orders — show of strength hikes optimism (STEEL survey), 3/4, p.25
Metalworking sales record high, 6/17, p.113
Metalworking managers, what they expect in 2nd half, 6/24, p.63
Optimism obscures recession talk, 3/11, p.93
Presidents panel (NICB) predict uptrend in three major markets, 3/25, p.26
Reappraisal of 'booming sixties' (lead story), 5/20, p.25; why business is so good, 5/27, p.129
STEEL Panel forecast: Sidewise swish plus optimism, 4/15, p.25

Business Leaders:
Brower (BBD&O) appraises businessmen, 1/21, p.82

Business Processes:
How to cut cost of 'business processes' (engineering, planning, selling, supervising, accounting) 5/13, p.79

Business Projections:
Year 2000: Same problems, but higher numbers, 4/1, p.25

C

C.O.S.T.:
Scully-Jones marketing (coordination of spindle-type tooling), 4/8, p.60

Cadmium: See Stockpiles

Canada:
Auto boom, 6/10, p.162
New government seeks closer ties with U. S.: Ontario's Macaulay sums up, 4/29, p.26
Nova Scotia seeks new industry, 6/24, p.32

Cans, Canmaking:
AMA conference: Aluminum beer can, other developments, 4/29, p.25
Aluminum beer cans impact formed, 5/13, p.82
Aluminum can plant, Nova Scotia, 6/24, p.32
Can seam soldering machine, TO, 5/6, p.20
Tin cans for soft drink markets 2/18, p.33

Capital Expenditures:
Autodom's spending, '63 outlook, 1/21, p.71
Capital spending projection by year 2000, 4/1, p.25
Commerce Dept. and SEC survey, estimate of '63 business spending; Paradiso reports not enough to boost economy, 3/18, p.26
Companies set up formalized spending programs (NICB report), 4/1, p.24
Construction, machinery and appliances, uptrends predicted, 3/25, p.26
GM to boost spending, home and abroad, 2/25, p.26
How job shops should buy capital equipment, 4/1, p.44
Metalworking presidents surveyed on '63 equipment buying (tax cut holds key), 1/14, p.21
Metalworkers challenge depreciation 'benefits', 2/18, p.29
New plant and equipment, 2nd half (Commerce and SEC), 6/17, p.26
Steel modernization - expansion programs, 1/7, p.33
Steelmakers' '63 plans, 1/14, p.22

Carbon:
New forms of carbon improve furnace insulation, 5/6, p.76

Carroll University, John:
Seminar for steel producers, 1/28, p.27

Case Institute of Technology:
Glennan: R&D expenditures by 1968, 1/7, p. 20

Cast Iron:
BISRA new tech. makes high purity iron in 30 minutes, 3/11, p.64

Casting, Castings:
Continuous casting (50 firms active), 3/25, p.29
Continuous casting aluminum mill, Decatur, Ala., 3/11, p.33
Continuous casting combine formed in Europe, 3/25, p.177
Continuous casting firm (Roblin-Seaway), 1/28, p. 31 and new mill in Dunkirk, N. Y., 4/1, p.57
Continuous casting automatic control device, 6/3, p.27
Continuous casting, horizontal rather than vertical unit, 6/3, p.27
Continuous casting breakthrough with horizontal instead of vertical unit (Concast predicts), 6/17, p.71
Continuous casting line, (Connors Steel) really continuous, 3/25, p.31
Continuous casting machine (Armco's Sand Springs Wks.), 4/1, p.17

Continuous casting mill for Tennessee (Rebel Steel), 6/10, p.31
Continuous casting machine (Koppers) for square billets, 3/18, p.33
Continuous cast wire (H. K. Porter), 5/6, p.74
Continuous cast steel bars replacing ingots at new plant (Roanoke Electric, Roanoke, Va.), 5/13, p.29
Continuous casting unit (U. S. Steel) annual report gives 'peek', 3/25, p.31
Continuous casting Russian license sought by U. S. firms, 6/17, p.29
Design high cost of precision out of investment castings (guide rules-tolerances), 1/21, p.41
Fluted, octagonal ingot molds improve metal, 3/4, p.20
Green sand mold, problem, TO, 5/20, p.20
Plastic foams make good patterns, 4/1, p.20
Pressure casting of steel wheels automated, 3/4, p.62
See also Diecasting

Ceramics:
Engineers find new ways to manage heat, 1/14, p.35
GE ceramic made of powder, hard as sapphire, 2/25, p.19
GE ceramic (Lucalox) packs big punch in materials war, 3/4, p.56
Strain hardening strengthens brittle ceramics, 3/4, p.20

Chemicals:
Anticorrodant (enzymatic deoxygenation), TO, 6/17, p.20
Chrysler stamping plant develops drawing compound, 6/10, p.31

Chicago:
1962 GNP in Chicago area, 1/7, p.28
Survey of businessmen for '63, 2/4, p.18

Chicago World Trade Conference:
Metalworkers bullish on world market opportunities, 3/11, p.25

China:
Mainland's recession on way out, 5/6, p.130
Will Chinese Reds push into global auto sales race? 2/4, p.84

Chrome:
Soviets dump chrome in Europe, 4/8, p.24
See also Nonferrous

Circuits: See Electric

Civilian Industrial Technology Program:
R&D export-Hollomon: Emphasis on community problems, seeks federal funds, 2/4, p.22

Cladding:
Copper clad laminated plastic can be punched, 4/1, p.52

Cleaning, Blasting:
ACF installs grit blast cleaners at two plants, 2/25, p.71
Small blaster (Lukens Vacu-Blaster), slab cleaner-dust free, 1/28, p.54

Coal & Coke:
Metallurgical coke made from noncoking coal, 3/11, p.19
Nuclear developments aid coal mining research, 5/13, p.76

Coal Injection: See Steelmaking

Coatings:
See Electroplating
See Finishes, Coatings

Cold Forming:
Cold forming puts heat on costs (cover story), 5/20, p.49
Cold forming, extrusion joined to turn out fasteners (Raycarl process), 5/27, p.83
Domestic vs foreign, an evaluation, 5/20, p.53
Precision tubing cold formed (Flo-Rol) in steel and nonferrous metals, 1/21, p.42

Cold Heading:
Cold headed beryllium copper fasteners, Hubbell Inc., 6/3, p.73 and 6/24, p.71

Communications:
AT&T center for communications review, 3/25, p.83
Japanese job shop: Simple signal method boosts productivity, 4/29, p.50
Dr. Laitin (SRA): How to counter employee resistance to change, 3/11, p.29
Dr. Likert: Flaws in communication stifle good ideas, 1/14, p.86

Community Progress:
Detroit labor-management committee for community progress, 3/11, p.19

Components:
1st quarter survey, 2/4, p.24
2nd quarter survey, 5/6, p.29
PAs see price trends for rest of '63, 6/10, p.26

Computers:
Articles:
Where buttons mean billions, 4/8, p.52
Where computers call the shots best, 3/11, p.49
1975: RCA predicts 75,000 computers, 4/3, p.18
AISE (Komjathy) speaker: Computers cut steel costs, market seen for 4000 units, 2/11, p.98
ARCH system for small companies (British firm), 3/11, p.56
ASM's searching literature service, who should use? 3/4, p.58
Automatic design researched for AF by M.I.T., 6/24, p.70
COINS symposium, Northwestern Univ.: Adaptive systems needed for 'machines that learn,' 6/24, p.30
Computer dictionary, 3/11, p.55
Computer service (GE) for small firms, government agencies, 3/4, p.69
Computer speeds micrograph analysis, 1/28, p.54
Cost performance via engineering function (CPM, PERT), 1/7, p.131
Digital computer on cameras in aerial reconnaissance plane, 3/11, p.20
Drafting and computer designing tech., 1/7, p.137
Drucker (N. Y. U.) attacks nonselective use of computers, 3/18, p.180
Japan's Nippon Kokan controls L-D furnaces with computer, 4/8, p.23
Japanese automaker automates production control system, 6/10, p.100
Library use insufficient, 4/15, p.20
Magnetic memory disc designed for small businessman, 4/1, p.19
Manager's role spells computer success, 4/22, p.31
Managers urged to use data processing in inventory control as well as accounting, etc., 4/1, p.67
Marketing computer role, 2/11, p.176
Postprocessor (Gecent) speeds tape contouring, 1/14, p.40
Postprocessors added to Univac's Sympac, 2/25, p.59
Process controls only, market forecast for industries, 3/11, p.59
Process controls — where buttons mean billions, 4/8, p.53
Production information, computer via IBM data collection system, 6/10, p.18
Put computer to work on NC instructions, 4/8, p.67
RT&B (management organization chart-computer) England: How to automate a steel plant, 1/14, p.42
Reference computer (roundness determinations), TO, 4/8, p.20
Systems concept worked in computer installation, Kitchens of Sara Lee, 6/17, p.28
Tunnel diode, switching device for computers, 5/13, p.94
Univac's little (17 lb) computer introduced, 1/28, p.17
See also Management Systems
See also Steel Mill Controls

Construction:
1962 industry (totals, per cent changes), 1/14, p.18
1963 predictions, ASCA, 1/7, p.19
Nunlist (Worthington): Predicts uptrends, 3/25, p.26
Staten Island - Brooklyn bridge cables spun, 3/18, p.112

Construction Equipment:
Industry report: Executives surveyed at Chicago Road Show, 3/4, p.27

Consumer Credit:
Consumer debt nears danger point (Alexander Hamilton Inst.), 5/27, p.18

Consumer Price Index:
Relationship between steel prices and CPI, 4/22, p.26

Consumer Spending:
Consumer spending in other countries follows U. S. trend, 2/4, p.83
How to create consumers (unemployment problem), 6/17, p.55
Metalworking loses traditional share to other fields (chart), 2/4, p.34
Why business will stay high in '63, 6/10, p.25

Copper:
Cold worked copper insures safety in transformers, TO, 3/4, p.20
INCRA's research programs, U. S. and Europe, 6/3, p.53
See also Nonferrous

Copper & Brass Research Assn.:
1963 sales outlook for aluminum, copper, titanium, 1/7, p.31

Copper Development Association:
Formed, eventually to replace CABRA, 1/14, p.26 and 5/20, p.28

Corrosion:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19
CEI powerplant, stainless tubing solves problems, 1/21, p.44
Chemical anticorrodant (enzyme deoxygenation), 6/17, p.20
Corrosion rates of resistant alloys in heat transfer equipment tested, 4/8, p.64
Fiberglas reinforced plastic for corrosion environments forecast, 4/8, p.73
Fretting corrosion in bearings cut by liquid plastic sealant, 1/28, p.48
NACE evaluates tests for metals, 4/15, p.20
Swedish standards for corrosion care, 1/21, p.20

Cost Cutting:
Burnham (Westinghouse) cost cutting tips, Westinghouse Machine Tool Electrification Forum, 6/17, p.27
How to cut cost of 'business processes' (engineering, planning, etc.), 5/13, p.79
Material handling—cost cutters' challenge, 2/11, p.84
Metalworking: 4 cents reduction adds 40c to each profit dollar ('63 challenge), 1/7, p.129

Cost Improvement Programs: See Management Systems

Council for International Progress in Management:
Manila conference, 1/7, p.289

Cryogenics:
GE-small cryogenic refrigerator, 1/21, p.17

Crystals:
Designers push materials (xenon tetrafluoride compound), 5/13, p.63
Electroluminescent diode makes bright light (tiny chip of crystalline), 2/18, p.20

Cuba:
USSR to build steelworks, Oriente province, 1/7, p.289

Customer Service:
Aluminum Extrusions opens office, fills small orders, etc., 3/11, p.65
Standard Pressed Steel: Quality assurance service (IDQA), 1/28, p.53

Cutting Fluids: See Lubricants

Cutting, Shearing:
Airplane wing cutting, laminar flow control at Northrop, 6/10, p.98
Hydraulic shear trims hot slabs, 6/24, p.76
New (special milling) saw cuts costs, delivery time (Alloy Steels warehouse), 4/1, p.48
Scrap cutting dock, gantries have powder cutting torches, 6/10, p.115

Czechoslovakia:
Holub roll forging process (Letany at Prague), 5/6, p.72
Plasma torch runs on water, 3/4, p.20
Plasma torch lauded by Czechs, 6/17, p.82
Powder metal growth, 1/7, p.168

D

Data Processing:
EDP used by Holley Carburetor in purchasing, 4/29, p.49
Japanese carmaker automates production control system, 6/10, p.100
Venders-data retrieval system at General Dynamics, 5/6, p.87
See also Computers

Defense:
1963-64 defense spending, 1/21, p.26
Big new markets of '60s: Where defense markets are headed, 5/27, p.74
Budget points up changing defense spending pattern, 1/28, p.26

Defense Contracts:
ARA, SBA aid small firms to get contracts, 4/15, p.93
Bundy: Defense contractors, with federal assist, could double defense exports, 4/1, p.23
Contract language, watch—it can save your business, 6/3, p.61
Douglas Aircraft and subcontractors join in novel financing plan for DC-9 jets, 5/20, p.31
Guidelines (LMI system) proposed to determine profits in negotiated contracts, 2/25, p.25
Guidelines approved for defense contract profits, 5/13, p.19
McNamara: Defense orders to go to efficient firms, 2/11, p.28
Space contracts-participation (Chicago Space Conference reports), 5/13, p.27
Turbine industry awaits ruling on foreign bids, 3/11, p.28
Turbine contract favoring Allis-Chalmers protested by Hitachi, 5/13, p.92

Defense Supply Agency:
Auctions surplus items, Las Vegas, 2/4, p.42
Centralizes equipment authority, 1/21, p.50
Warranty program set for surplus buying (DLSC), 5/13, p.93

Depreciation:
Impact of depreciation rules shows up (speeds cash flow, capital spending plans slow), 2/11, p.25
Incentives boost earning power of investment dollar, 1/7, p.154
Metalworkers challenge new guideline benefits, 2/18, p.29
NMTBA: Impact of depreciation reform gradual, 3/4, p.17
Steelmakers, what new guidelines mean (chart), 2/11, p.26

Descaling: See Ultrasonics

Design:
Arwood's design guide rules for investment casting, cost reduction for precise tolerances, 1/21, p.40
Automotive style cost cutting—eight stumbling blocks to effective design, 1/7, p.282
Case for design beyond engineering (value analysis), 5/13, p.71
M.I.T. developing automatic design for AF (computer-engineer, man-machine designing team) 6/24, p.70
Plasticsmakers woo design engineers, 2/11, p.29

Design Show:
New York conference, show (report), 5/13, p.68 and 5/27, p.25

Detroit:
Labor-management committee for Community Progress, 3/11, p.19

Diamonds: See Industrial Diamonds

Diecastings:
Cook stove door frames diecast in zinc, 1/28, p.58
GM gets giant diecaster, 4/29, p.29
GM's magnesium diecasting, AC Spark Plug, 5/20, p.91
Infrared detectors protect diecasting dies, 6/3, p.60

Magnesium diecasting tips, automotive use, 5/20, p.91
Robot type handling devices, 2/25, p.48

Dies: See Tools & Dies

Diffusion Bonding: See Welding

Direct Reduction:
Arkota, Gulf States, Sovereign debuts hit problems ('Little 3'), 2/11, p.29

Disposal Plans: See Stockpiles

Distribution: See Warehousing

Distributors:
ASMMA conference takes aim at profit improvement, 6/10, p.29
Nelms: Industrial distributors unique in economy, 1/14, p.86
Survey of industrial distributors for '63, 3/11, p.17
Minneapolis-Honeywell problem, an overgrown product line was havoc for distribution, 1/7, p.162
Scully-Jones tool distributors learn C.O.S.T marketing system, 4/8, p.60

Diversification:
DTL: Aid to product diversification, 2/25, p.30

Dividends: See Financial

Drawing:
Astroluster tubing, drawing process makes smoother finish, 3/18, p.108
Better drawing lubes found, TO, 3/11, p.20
Drawing compound, Chrysler stamping plant, 6/10, p.31

Drilling:
Bore drilling lowers reject rate, 5/27, p.94
Gun drilling saves on short holes (rifle part), 2/11, p.92

Drives, Controls:
Gar Wood features individual hydraulic motor drives, 3/4, p.20
Hydrostatic drives, TO, 5/20, p.20
Reliance Electrical's new solid state speed drives, 1/21, p.29
U. S. Steel contract with Reliance Electric, 1/21, p.30

Dumping:
Soviets dump chrome in Europe, upgraded into ferroalloys, 4/8, ing)
See also Steel Dumping

E

Earthmoving Equipment:
Giant trucks move materials, 2/11, p.84

Eddy Current: See Inspection, Testing

Editorials:
Back to the Market Place, 4/22, p.15
Be a Profit Seeker, 1/7, p.15
Can You Compete? (foreign markets), 1/14, p.15
Challenge in Materials! 2/4, p.15
Exploring New Markets, 2/18, p.15
Facts and Figures, 3/25, p.15
Fiscal Fitness, 3/11, p.15
If Wives Travel (conventions), 5/20, p.15
Jobs—Our Jobs, 6/17, p.15
Keeping Up With Joneses (R&D vs Space funds), 5/13, p.15
Lesson in New Orleans, 6/10, p.15
Let's Bake a Bigger Pie, 3/18,
Moderation, Please ('63 price-wage theme), 4/29, p.15
p.15
Operation Resurgence (AISI meeting reports steel industry), 5/27, p.15
Opportunity Vision (new markets), 2/11, p.15
Play Fair on Engineering! 3/4, p.15
Read the Signs! (technological and market changes), 5/6, p.15
Selling the New Markets, 1/28, p.15
So We Have Troubles! (Europe's problems), 4/1, p.15
The Big New Markets, 1/21, p.15
The Human Factor (business trends), 4/15, p.15
The Challenge of Jobs, 2/25, p.15
Turning Tide? (Financial Analysis), 4/8, p.15
What Doldrums? (metalworking, 2nd half), 6/24, p.15
What Price Imports? 6/3, p.15

Electric:
Integrated circuitry, 4/29, p.40
How to get reliable percussive welds in electrical connection, (Coyne-Bell Telephone), 6/3, p.70
Material (boron nitride) conducts, insulates, 4/8, p.59
Thin film circuits, semiautomatic cycle (Melpar), 4/22, p. 33
Thin film circuits, Western Electric, 4/22, p.33

Electric Power:
Converting heat directly into electric energy: Dr. Pidd addresses Power conference, 4/8, p.67
Detroit Edison generator, digital directed analog control system, 4/22, p.31
Fuel sources for 1980's generation, 4/1, p.17
MHD generators teamed with superconducting magnet, 1/14, p.17
New Zealand's hydroelectric facility powered by glaciers, 5/13, p.145
Tidal power to general electricity, Australia, 3/18, p.178
Waste heat from furnace to generate power? 6/10, p. 170

Electroforming:
Ultrasound boosts electroforming quality (Ames Research), 6/3, p.67
Ultrasound vibrations boost electroforming quality (nickel coatings), 6/3, p.67

Electroluminescence:
Becomes useful light source, 3/25, p.18
Chip of crystalline converts electricity into red light, 2/18, p.20

Electrolytic: See Machining

Electron Beam:
Analyzes materials, 3/11, p.20
Automated electron beam processing system to make microcircuits, 4/8, p.73
Brazing with electron beam, unit has vacuum lock, 4/29, p.20
Electron beam measures temperature in steel plant, 2/18, p.62
Stauffer-Heraeus (Germany) market electron beam furnaces, licensing rights, 4/8, p. 27
See also Welding

Electronic Industries Assn.:
Industrial electronics sales, meeting report, 6/24, p.29

Electronics:
Electron pictures (Photomultipliers) study metal composition, 1/14, p.20
Integrated circuitry (also called microelectronics) where it pays to think small, 4/29, p.40
Work station for electronic assembly, 1/14, p.28

Electrophoresis: See Metal Deposition

Electroplating, Plating:
Bright satin nickel plating finish, Dur-Ni, 6/24, p.31
Plastic parts chrome plated, 4/8, p.18
Plating by nonelectrolytic methods in '63, 1/7, p.20
Ultrasound boosts electroforming quality (thick coatings of pure nickel, pit and pore free), 6/3, p.67

Employees:
See Communication
See Training

Employment, Unemployment:
Unemployment: How to create consumers, 6/17, p.55
Where employment is up the most (business trend), 6/3, p.97

Engineering:
Cost performance via engineering function: Where value becomes a dimension (computers), 1/7, p.131
Editorial: Play fair on (free) engineering, 3/4, p.15
Educational programs, funds, 5/6, p.18
Enrollment uptrend, survey, 3/4, p.18
Graduate work lessens engineers available to recruiters, 3/4, p.29
Median salaries, 3/11, p.66
Needed: More emphasis on graduate training, 1/28, p.98

Equipment Makers:
Sales outlook brightens, 5/6, p.125

Etching:
Defect etching machine, 2/4, p.41
Etch aids anodizing, 'Noralbryte,' 2/11, p.20
Photochemical etching, 6/24, p.31

Europe:
Common Market:
Antitrust laws (new) spelled out, 1/21, p.78
Antitrust laws checked by Kefauver, 3/11, p.29
Differences in wage costs within four industries, 4/1, p.97
Eric Johnston (management congress): U. S. not prepared for economic clash with ECM, 2/18, p.102
Scotland—disadvantages out of common market, 4/1, p.98
Continuous casting combine formed, 3/25, p.177
ECSC enters second decade, 6/24, p.120
Europeans work outside homelands, 2/25, p.101
GNP rise in '63, 1/21, p.78
Steel production drop, 1/21, p.78
Whitecollar salaries, comparisons by countries, 2/4, p.83

Expansions: See Plant Expansions

Explosives: See Forming, Bending

Exporters:
U. S. exporters can get credit aid to fit needs (chart), FCIA program outlined, 4/29, p.46

Exports, Imports: See Foreign Trade

Extrusion:
Cold extrusion pays off, 5/20, p.54
Cold forming, extruding fasteners, 5/27, p.83
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Prototype machine (internal roll extrusion) fabricates high strength steel-aluminum into cylindrical structures, 1/14, p.26

F

Fabrication, Assembly:
Automation speeds auto door lock assembly, 5/6, p.91

Factory Workers:
New workers worth to town (Commerce study), capital spending, 2/4, p.26

Facts & Figures:
Annual edition, 3/25, p.87

Farm Equipment:
Farmer, a champion consumer, 2/25, p.18
Knee action in tractor wheels, 1/28, p.20
Teflon plastic plow, 1/28, p.20

Fasteners, Fastening:
Chemical bonding gives locking power to Jay-Lok fastener, 5/6, p.31
Cold forming, extrusion joined to turn out fasteners, 5/27, p.83
Cold heading beryllium copper fasteners, Hubbell Inc., 6/3, p.74 and 6/24, p.71
Nylok licensing for self-locking fasteners, 1/14, p.49
Plastic fasteners hold, seal, insulate trim, 3/25, p.78
Plastic fastener (nylon expansion type), 6/3, p.70
Vibration tests at Bell labs, 6/10, p.102

Financial Analysis:
Annual steel industry (insert), 4/8, p.67

Financial:
Dividends build investor confidence, 1/28, p.19
Income (personal) wages-salaries, 3/25, p.17
Income (upper group), 6/10, p.18
Metalworking profits, 2nd quarter, 5/13, p.28
Steelmakers' 1962 earnings, 2/11, p.26
Steelmakers, 1st quarter, 5/6, p.26

Financing:
Douglas, subcontractors novel financing plan for DC-9 jets, 5/20, p.31
Nationwide Leasing, 'million dollar plan,' long term financing, 3/4, p.30

Finished Steel:
1962 mill shipments, 2/11, p.147; and first eleven months, 1/14, p.18

Finishes, Coatings, Paints:
Ablative coatings (AC-1, AC-2) resist missile heat, 6/3, p.31
Ablative plastic coatings, metal insulator, 6/3, p.73
Bright satin nickel plating finish tested, 6/24, p.31
Chromate coating (Granodine No. 92) for prepaint use on galvanized surfaces, good for coils, 6/10, p.113
Coat cold parts with cold plastic powder (French-Stafluid method), 6/3, p.31
Coatings needed to protect refractories for space vehicles, 6/3, p.70
Dip painting light fixtures at Westinghouse (trichloroethylene acrylic resin), 3/25, p.74
Electrostatic painting, automatic line, 2/4, p.41
Metal-ceramic coatings, temperature protection, 5/13, p.84
Molybdenum coated with refractory (pack cementation coat), 2/4, p.20
Nickel coated grains of aluminum gun sprayed coatings for oxidized metal, 5/13, p.33
Oxalate lube coat for stainless wire, 6/17, p.76
Paint curing oven, fuel tank lining job, 4/1, p.28
Paint deposited from water solution electrically, British firm, 5/6, p.74
Plastic fused coat to interior of steel shipping containers, 2/25, p.51
Plastisol-vinyl foam coating for metal parts, 3/11, p.63
Solder coating on electronic components, 4/8, p.58
Tungsten protective coat, special glass, TO, 6/17, p.20
Vacuum coating gives metals corrosion protection, 1/14, p.26 and TO, 6/10, p.20
See also Automotive

Finishes, Tolerances:
Don't lose profits in finishes, tolerances, 2/18, p.56

Flame Cutting:
New gas, Methylacetylene, increases cutting speeds, 4/15, p.79

Flux:
Pellet production, self-fluxing, 3/4, p.62

Foreign Aid:
AID may finance India's steel plant, 1/14, p.25
CABEI (Central American Bank for Economic Integration) joins Westinghouse for Latin American aid, 4/22, p.142
FCIA (Foreign Credit Insurance Assn.) program gives U. S. exporters credit aid, 4/29, p.46
Tax credit plan tied to foreign aid (President's plan), 4/22, p.148

Foreign Competition:
Are you ready for second cycle in Europe's expansion? (Derdian before ASTME), 5/20, p.28
Behrman (Commerce): Separation of domestic-foreign business meaningless, 3/25, p.180
Can machinery makers hold their own in world markets? 1/7, p.25
Editorial: Can you compete? 1/14, p.15
Europe's research ahead (Prof. Schmidt warns), 4/15, p.27
Soviet economic offensive, 2/18, p.51

Steel dumping (see)
Steelmakers take aim at world competition (production), 5/27, p.23
Steel users winners in competitive race (John Carroll Univ. seminar), 1/28, p.27
Westinghouse (Cresap) outlines steps in competitive challenge, 3/4, p.106

Foreign Investments:
Amertool (machine tool group) form Japanese subsidiary, 2/25, p.54
Anaconda builds in Chile, 6/24, p.33
DeVlieg forms German sales subsidiary, 1/28, p.31
Ford builds bearing plant in Puerto Rico, 3/11, p.31
Giddings & Lewis subsidiaries (Scottish and German) will market tools in North America, 3/4, p.29
Overseas Investment Handbook released by Noyes, 2/18, p.99

Foreign Markets:
Chile encourages U. S. investments, 6/24, p.33
Czech steel output, 2/25, p.101
French Fourth Plan, steel exports, 2/4, p.51
German Bundestag follows NATO, prohibits selling pipe to Russia, 3/25, p.29
India-Soviet bloc trade upped, 2/18, p.99
India: Iron-steel outlook high, 5/27, p.133
Italy, East Germany sign trade agreement, 4/29, p.87
Japan good market for U. S. machinery makers, 1/28, p.28
Japanese coking coal executives seek U. S. price cut, 2/4, p.23
Japan's Nagano (Fuji Iron) seeks closer ties between Japan-U. S. industry, 5/20, p.99
Latin America, Europe outlook (executives at Chicago World Trade Conference), 3/11, p.26
Philippines want used equipment, 1/21, p.81
South Africa welcomes U. S. manufacturers, 4/1, p.26
Switzerland, economic boom, 6/3, p.101
U. S. losing European markets (Von Kleydorff report), 2/11, p.176
West Indies (Trinidad and Tobago), good outlook, 6/3, p.101

Foreign Trade:
1963 import-export outlook (NFTC estimate), 2/4, p.49
AID report U. S. sales made overseas, 2/11, p.173
Aluminum, copper products imports, 1962, 2/25, p.77
CED asks closer ties between U. S.-Japan, 4/15, p.29
Commerce Dept. export program develops trade, 4/29, p.26
Defense contractors exports could double in 10 years, 4/1, p.23
Export business, how important? (two examples), 2/18, p.100
Export credit aid, Commerce programs (STEEL presents information chart), 4/29, p.46
Exports, BDSA predicts gains, 3/4, p.103
Exports up in 8 categories (BDSA), 3/25, p.177
Gatt countries to meet to prepare for Kennedy round of negotiations, 3/11, p.27
Ferromanganese imports threaten U. S. industry, 3/25, p.28
Imports in relation to total supplies for '61, 4/8, p.104
Manganese, chrome import quotas sought by metalmakers, 6/3, p.28
Material handling equipment exports, 6/17, p.19
Metalworkers bullish on world market opportunities, 3/11, p.25
Special equipment exports increase, 1/7, p.289
Steel imports through Western customs districts for '62, 1/28, p.54
Steel products, exports-imports of 1962, 3/18, p.120
Tariff negotiations start between U. S.-European Common Market, 2/11, p.173
Tariff protection to U. S. industries (chart), 2/25, p.102
U. S. licenses to trade with Reds granted by Commerce Dept. lag, 3/18, p.29
U. S. share of world machinery exports, 1/7, p.25
U. S.-West German trade, 3/11, p.97
World exports (chart), outlook for '63 vs '62, 1/28, p.96
World trade, route to growth and security, 3/25, p.180

Foremen:
Chart pinpoints illusive cost targets for foreman, 1/7, p.152

Forging, Forgings:
Aluminum forgings for jet airfreighter, 2/25, p.66
Beryllium copper cylinders forged (undersea telephone parts), 1/28, p.56
Die forgings, '62 record breaker, 1/28, p.93
High energy rate forging report, 5/13, p.68
Spin forging at Astro Structures, 1/21, p.35
Roll forging (Holub process), Czech auto firm at Prague (Letanys), 5/6, p.72
Switch to forgings (AISI 4130 alloy) smashes costs in no-reject production of cylinder caps for Nike missile launchers, 1/28, p.55
See also Presses

Forming, Bending:
Cold forming (Flo-Rol) precision tubing in steel and nonferrous, 1/21, p.42
Cold forming-extrusion (Raycarl) fasteners, 5/27, p.83
Cold forming puts heat on costs, (STEEL Feature) 5/20, p.49
Electrohydraulic forming machine (Scotland), 4/8, p.103
Explosive forming steel plates for hull of river cargo ship, 2/25, p.20
Explosive forming with cast steel dies, Saturn booster, TO, 6/10, p.20
HerForming machine, cold slugs, 3/4, p.20
HERF to form auto wheels, TO, 5/20, p.20
Hot vacuum forming (sheet metal parts), 4/1, p.20
Metal forming trend (B-L-H president notes), 5/27, p.17
Press brake forms without dies, 6/3, p.57
Stretch forming, auto process, 5/13, p.138

Foundries:
Arwood: Design high cost of precision out of investment castings (design guide rules), 1/21, p.40
Bellows-Valvair: Captive shop mechanization, measured by cut of reject rate on brass castings, 2/25, p.50
European research and ours, differences, 4/8, p.22
Griffin Wheel: Automated pressure casting handling line, 3/4, p.62
Inland's new mold foundry, Indiana Harbor, 1/21, p.52
National Engineering: Sand lab, 3/11, p.35
Sealed Power: Foundry shows value of going modern, 1/28, p.45
See also Casting

Foundry Equipment Manufacturers Assn.:
Orders hit record pace, 4/15, p.29

Freedom Foundation:
Awards medal to STEEL, 2/25, p.17

Freight Car Plant:
Freight car plant may go up near Kaiser mill, 5/6, p.89

Freight Cars, Freight Rates:
Calif. tax bill exempts freight car 4% state sales and use tax, 5/6, p.89
ICC asked to reverse tin plate freight rate ruling, 2/11, p.147
Maritime Commission investigates unfair freight rates, 6/3, p.19

Fringe Benefits: See Labor

Fuel:
1980 fuel sources for electric power generation, 4/1, p.17
Commercial fuel cell near, chemical plants may be first to use, 4/1, p.20
Fuel for military, space power (mobile energy depot), 4/1, p.18
GE fuel cell operates on natural gas, 1/21, p.28
GE's hydrocarbon fuel cell, 4/29, p.28
Lift trucks powered with fuel cells, forecast, 5/20, p.20
Natural gas endorsed by Inland as openhearth fuel, 3/18, p.31
Petroleum refiners' new process yields for fuel oil, turns out petroleum pitch, 3/11, p.20

Furnaces, Ovens (Heating, Heat Treating):
Air atmosphere furnace, fast anneal at Firth Sterling, 5/13, p.74
Alloy anchors hold furnace refractory, 6/17, p.74
Car bottom furnace programed for quality, 2/18, p.69
Electrical heating system for drying ladle linings, 2/18, p.64
Electron beam furnaces for sale (joint venture), 4/8, p.27
French gantry furnace for heat treating rocket motor cases (Lindberg affiliate), 4/29, p.54
Hot sandwich oven (refractory sandwich honeycomb), TO, 5/27, p.20
Ingot preheat induction furnace conveyorized, 6/24, p.84
Paint curing oven (fuel tank linings), 4/1, p.28
See also Oxygen Furnaces
See also Vacuum Furnaces

G

Gages:
Vertical strip motion while reading coating thickness simplifies gage unit, 4/29, p.52

Galvanized Steel:
Chromate coating for prepaint use, good for coil finishing, 6/10, p.113

Gas: See Fuels

Gas Appliance Manufacturers Assn.:
Shields address: Business recovery, 4/8, p.17

Gears:
Gear surface fatigue, ARF study, 2/25, p.30
Russians make gears by hot knurling, 2/25, p.20

General Services Administration:
See Stockpiles

Germany:
Antidumping tariffs against Japan, 4/22, p.207
August Thyssen-Hutte merges Phoenix-Rheinrohr, 6/17, p.118
Consumer spending trend follows U. S. pattern, 2/4, p.83
Economic barometer for '63, 3/18, p.177
Economic boom runs out, rising taxes, wage rates threaten exports, 5/13, p.90
Demag and Yawata sign license for gas recovery system, 4/22, p.207
Erhard: European unity 'predestined' (after DeGaulle refusal to Britain into Common Market), 3/4, p.104
Export credit assistance, 1/14, p.83
Dr. Fredericks: Challenges U. S. business, 4/15, p.122
Shorter workweek brings lower production, 1/21, p.81
Pipe sales to Russia prohibited by Bundestag, 3/25, p.29
Steelmen angered by NATO (licensing tubing), 3/25, p.85
Wage increases tied to productivity, 5/13, p.145
Wage pact under new labor contract, Building Trades, 3/18, p.177

Glass:
Glass fiber rocket motor casings, 2/25, p.31
Glass fiber for tires, study, TO, 6/24, p.20
Soviet scientists have glass for constructing auto engines, TO, 6/17, p.20

Government:
AID (See Foreign Aid)
Antidumping (See Steel Dumping)
Antitrust:
GM probe, 5/27, p.125
Kefauver checks EEC's antitrust laws, 3/11, p.29
Kefauver subcommittee vacancies filled by conservatives, 4/1, p.17
Bundy: Defense contractors should double exports in next ten years, 4/1, p.23
CED asks closer ties between U. S.-Japan, 4/15, p.29
Coleman (IRS): Can our economy afford disarmanent? 4/8, p.106
Commerce (Goldy) addresses AMTDA on capital equipment, 4/15, p.27
Commerce seeks list of tariff concessions wanted by industry from other countries, 4/15, p.88
Defense budget, where spent, 1/28, p.26
FTC report on mergers, 2/18, p.28
Federal budget shows deficit, 1/21, p.26
Foreign aid funds, status, 4/8, p.18
GATT target in 1964, 3/11, p.28
Hodges: Are all imports competitive? 1/28, p.18
Hollomon (R&D proposals), 2/4, p.21
Kerr (Sen.), death, drops odds for tax cut, 1/7, p.27
Manpower report, 3/25, p.83
McNamara (see Defense Contracts)
Mills promises help on polished stainless sheets from Japan, 2/11, p.18
NLRB's impact on collective bargaining (contracting out is major issue), 4/1, p.21
NLRB ruling on GE, club for IUE talks? 4/8, p.17
NLRB: Short workweek legislation, 5/27, p.26
Silver legislation, effects, 6/3, p.28
Patents (see)
Reciprocal trading, joint ventures foreseen (NICB meeting report), 3/18, p.27
State of Union address, Congressional reaction, 1/21, p.26
Steel price increase hearings, 4/22, p.26
Steel price hearings start, Douglas Committee, 4/29, p.24
Strackbein (protectionist) calls for five year moratorium on tariff cuts, 3/11, p.27
Taft-Hartley labor - management panel revived, 6/3, p.26
Tax bill (see Taxes)
Tower (Sen.) criticizes government's role in business, 4/1, p.100
Trade Expansion Act (editorial), 6/3, p.15
Walsh-Healey, hourly wage for machine tool industry, 5/27, p.17

Graphite:
Bonding process (Japan), 1/14, p.20
Graphite cloth for ultrahigh temps., 1/14, p.38
Graphite felt used as insulation in vacuum furnace, 5/6, p.76
Heat builds strength, TO, 6/19, p.20

Gray Iron:
Barium silicide as an inoculant, TO, 4/15, p.20

Gray Iron Founders' Society:
Walton: Advances in foundry tech. in Europe, 4/8, p.22
Workman: Foundry modernization programs, 1/28, p.45
Workman: Operating rate of gray and ductile iron foundries up, 3/4, p.18

Great Britain:
Asquith (industrialist): We must barter with Reds, letter to *Times*, 3/18, p.29
"Brain drain," Ph.D.s emigrate to U. S., 5/6, p.129
Circular tinning line automatic, Glacier Metal Ltd., 1/28, p.96
Colvilles's Ravenscraig Steel Works: Gaugemeter on hot strip mill, 3/11, p.62
Harold Wilson: Nationalization of steel, 3/18, p.117
National Economic Dev. Council predict 1966 gains, 4/29, p.87

R&D spending, 6/3, p.101
RT&B: How to automate a steel plant, computers, 1/14, p.42
Steel mills since World War II, 5/27, p.24
Steel output, '63 forecast, 1/28, p.70; 2/4, p.50

Grinding, Polishing:
Coolant clarifier ends calender roll tailmarks, 6/10, p.117
Grinders in diemaking, 3/18, p.111
Heavy machining with abrasives, 4/8, p.25
Ultrasonically assisted grinding, lower costs, 4/15, p.31
Ultrasonic vibrations help grinding, 5/20, p.56

Gross National Products:
1968-70 projection, 6/17, p.27
Chicago area, GNP in '62, 1/7, p.29

Guides:
Guide to stainless steel producers, 3/18, p.104
Guide to tooling materials, 4/22, p.97

H

Hardening:
Hardening manganese steel, new process, 3/18, p.106

Harvard:
Livernash: On collective bargaining, 4/8, p.24

Heat Exchangers:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19
Corrosion rates of resistant alloys for exchangers get test at Carpenter Steel, 4/8, p.64
Exchanger assembled for cryogenic use, 5/27, p.33

Heating Elements:
Electrical heater for drying ladle linings, 2/18, p.64
Furnace heating element from molybdenum, silicon, 1/28, p.58
Diffusion bonding, TO, 4/22, p.20

Heat Treating & Annealing:
Atmosphere controlled furnace at Firth Sterling—variety of shapes gets fast anneal, 5/13, p.74
Manganese steel hardening, new process, 3/18, p.106
Pulsating heat process for hard steel parts (based on powder metallurgy tech.), 3/18, p.31

Highways:
Federal interstate highway program, construction report, 3/4, p.27

Hoist Manufacturers Association Inc.:
Elects, B, 3/18, p.35

Honeycomb:
Aluminum honeycomb, Flex-Core, easy to form, 6/24, p.35
Brazed honeycomb goes commercial (Bridgeport Brass), 2/25, p.56
Honeycombs welded with electron beam method, 2/4, p.19
Hot sandwich oven, TO, 5/27, p.20

Housing:
Low cost homes to boom, 4/15, p.19

Hydraulics:
Electrohydraulic forming machine (Scotland), 4/8, p.103
Gar Wood, individual hydraulic motor drives, 3/4, p.20
Hydraulic press (English) operated by punch cards, 1/14, p.39

Hydrogen:
Hydrogen good fuel for commercial basis, 4/1, p.20

I

Illinois Institute of Technology:
Armour Research study: Gear surface fatigue, 2/25, p.30
Armour: Philips cites people factors in locating labs, 4/15, p.93
Reliability Center, Elgin, 5/27, p.20

Incentives:
Lincoln Electric incentive story (sales per employee), 2/11, p.33
Loyola Univ. conference addressed by Ruttenberg: Kaiser plan will teach USW productivity facts, 5/27, p.26
President's research incentive plan, 1/28, p.25 and 2/4, p.21

Income: See Financial

India:
Bakaro steel mill studied by U. S. Steel, 5/13, p.91
Electronics era, 5/13, p.146
Iron-steel outlook high, steel produced, 5/27, p.133
Machine tool production, 3/4, p.104
Machine tool needs for 1961-66, 3/25, p.178
Motor vehicle output up, 2/4, p.83
Spending for transport and communications, 3/11, p.97

Indiana University:
Aerospace Research Appliance Center formed, 1/21, p.28
State and local government taxes, 6/17, p.18
Widespread dissatisfaction: Springboard to economic improvement, 3/18, p.17

Industrial Development:
See Area Development

Industrial Diamonds:
Ireland makes synthetic diamond bort, 6/3, p.31
Japanese (Komatsu) claims new way to make diamonds, 6/3, p.31

Industrial Fasteners Institute:
Elects, B, 6/3, p.33

Industrial Production:
Industrial output pace matches record, 5/13, p.141; 5/27, p.129
Six month forecast, Prentice-Hall, 5/13, p.17
Soviet output vs U. S., 5/20, p.17

Industrial Relations:
Goals for industrial relations executives (in company profitability), 2/18, p.26

Inserts:
Steel financial analysis, 4/8, p.67

Inspection, Testing:
Beta rays measure temperature in steel plant, 2/18, p.62
Corrosion rates of resistant alloys tested in heat transfer equipment, 4/8, p.64
Eddy current electronic detection unit ups pipe coupling quality, Magnaflux, 6/3, p.68
Eddy current valve test for Indianapolis race cars, 6/17, p.18
Electronic thermometer measures flame temperatures, steel plant, 2/18, p.64
Gaugemeter, hot strip mill (England), 3/11, p.62
Infrared detectors, diecasting equipment, 6/3, p.60
Masked microscope aids assembly of gyroscopes, 5/13, p.84
Neutron activation analysis, Kaman Aircraft, Nuclear Div., 6/10, p.103
Optical measuring, Bausch & Lomb, 5/20, p.60
Tube, bar testing, nonrotating, 6/24, p.81
Tube type thermostat accurate within 1/10° F, 1/21, p.39
Ultrasonic thermometer takes ocean's temperature, 4/15, p.18
Ultraviolet light for hot surface inspection, 1/28, p.20
Utilization Monitors and Producto-Corders show work performance, 5/13, p.73
See also X-Ray

Institute of Scrap Iron & Steel Inc.:
Annual convention report (look to Congress for special research funds), 1/28, p.29
Chicago elections, B, 3/18, p.35

Instruments: See Inspection, Testing

Insulation:
Graphite and carbon powders as furnace insulators are bypassed by a felt form of materials, 5/6, p.76

Insurance:
Political risk insurance to exporters, 1/21, p.27

International Copper Research Assn.:
Copper research program managed by Dr. Charles Moore (cover pic), 6/3, p.53

Inventories:
Components, 1st quarter, 2/4, p.24
Components, 2nd quarter, 5/6, p.29
Nonferrous, metal buyers, 3/4, p.27
Small steel buyers recheck inventories (strike threat), 4/29, p.23
Steel mill products, 1st quarter: Purchasers committee to inventory buildup, 3/4, p.26
Steel mill products, 2nd quarter, 6/10, p.27

Inventory Building:
Don't throw away dollars on unwieldy inventories, 2/18, p.60
GM will stockpile extra steel, 2/25, p.26
Moody's Stock Survey, inventory buildup slows, 5/27, p.17

Investment:
International report on factors of investment behavior (and economic growth), 2/4, p.52

Ireland:
Diamond makers aim at U. S. markets, 6/3, p.31
Japanese transistor radio plant, 4/15, p.121

Iron Ore:
California deposit checked (Shasta Lake), 1/28, p.72
Cleveland-Cliffs holds prices, 1/28, p.71
Inventories high may mean later shipping date, 3/18, p.29
Lake shipping gets late start, 4/15, p.98
Low grade ore processed by new Canadian method, Peace River area, 1/21, p.50
Pipeline suggested by Costantini (slurry from mine to mill), 1/28, p.30
See also Pelletizing

Italy:
Auto production in '62, 1/28, p.95
Crude steel output '62, 3/11, p.97
Machine tool output boom, 1/14, p.84
Steel consumption forecast (industries), 2/11, p.174
Wage hikes and shorter workweek, 3/4, p.104

J

Japan:
1960 GNP doubled by 1970, goal, 1/7, p.290
Aussies bow to Japan as steel price leader (Norman Hutchinson report), 1/21, p.82
Auto production forecast, 3/25, p.177
Canadian markets sought, 6/3, p.101
CED asks closer ties, U. S.-Japan, 4/15, p.29
Chugai Ro Kogyo Kaisha: Simple signal method boosts productivity, 4/29, p.50
Coking coal purchasing executives in U. S. seeking price cut, 2/4, p.23; 2/25, p.101
Commerce Dept. trade mission: Japan excellent market for machine tools, 1/14, p.25
Computer controls reversing billet mill (Sanyo), 3/11, p.58
Daido Steel: Mill has one planetary roll, lower costs, 1/14, p.46
Export-imports in '62, 3/11, p.97
Fuji and Yawata exchange of presidents, 6/10, p.33
Fuji Iron & Steel (Nagano) seeks closer ties between Japan-U. S., 5/20, p.99
Fuji Iron & Steel unveils automated Hirohata Works, 6/10, p.169
Hitachi protests Defense favoring Allis-Chalmers turbine contract, 5/13, p.92
Hondo Motor: Oriental maverick shows heels to competitors, 1/28, p.50
Industrial production outlook, 2/4, p.83
Japan Iron & Steel Federation, general assembly president, 6/24, p.120
Kokan's Kawasaki plant: L-D furnaces with computer, 4/8, p.23
Kokan steel bridge-prefab, bolted in 10 hours, 5/6, p.129
Kokan tin temper mill (built by Bliss), 4/8, p.28
Komatsu Diamond Mfg., new way to make diamonds, 6/3, p.31
Labor force growing, 5/13, p.145
LP-gas substitute for auto gas, 6/24, p.119
Parking wheel, 4/8, p.103
Pipe contracts, Venezuela and Brazil, 3/11, p.98
Pipe order to Russia cancelled by NATO request, 3/4, p.104
Red China must pay cash for future purchases, 2/11, p.173
Sony venture in Ireland (transistor radios), 4/15, p.121
Standard of living equals Italy, 4/1, p.97
Steel dumping welded standard steel pipe, U. S. Steel charges, 1/7, p.28; 4/1, p.24
Steel output forecast '63, 3/11, p.98
Steel prepares for new surge, 5/20, p.29
Steel profits drop, 6/10, p.170
Telecasts Olympic games (giant antenna) worldwide, 5/20, p.100
Toyo Bearing sells to U. S., 2/18, p.100
Toyo Kogyo: Carmaker automates production control system, 6/10, p.100
U. S. machinery makers find Japan good market, 1/28, p.28
Wages, report counters cheap labor image, 1/14, p.83
Yawata: L-D converter gas recovery process, 1/7, p.166

Jewel Bearing Plant:
President ok's Rolla, N. Dak., plant, 6/3, p.19

Jigs, Fixtures:
Centrifugal force for gripping solves chatter problem in brake drum boring, 4/1, p.43
Nesting blocks-universal clamps secure work, 3/18, p.111

Job Shops:
Higgins (Worcester Pressed Steel): How job shops should buy capital equipment, 4/1, p.44
Japanese firm uses signal system cuts production time, 4/29, p.50

Jobs:
Creating jobs, consumers, 6/17, p.55
Editorial: Jobs—Our Jobs (creating), 6/17, p.15

K

Kaiser Progress Sharing:
See Labor-Management

L

L-D Gas Recovery:
See Steelmaking (Oxygen)

Labor:
AFL-CIO: Beirne named compromise candidate to replace Meany, 1/28, p.19
Agency shop, only states can ban, 6/10, p.17
Bargaining breakdowns, public reaction, 1/28, p.17
Bargaining pressures in '63 mount warn Wirtz and Meany, 2/25, p.27
Boeing strike deadline (IAM and UAW), union shop issue, 1/14, p.23
Boeing refuses advisory panel recommendation, 1/21, p.25
Collective bargaining, NLRB impact, 4/1, p.21
Collective bargaining never easy (Ford's Denise), 4/1, p.100
Collective bargaining (Livernash views), 4/8, p.24
Contract language (watch clauses), it can save your business, 6/3, p.61
Fringe benefits, the case for being articulate, costs, list of benefits, 6/3, p.58
IAM: Hayes raps foes of collective bargaining, 4/22, p.28
IUE: NLRB ruling vs GE, 4/8, p.17
IUE-GE subcommittees study, 5/13, p.25
Kaiser workers briefed for progress sharing vote, 1/7, p.27
Labor contracts, how long should they run? 2/4, p.47

NLRB awards back pay (employees 'illegally fired' in union activity, 2/18, p. 19
Short workweek philosophy attacked by Kennedy, 4/1, p.22
Short workweek legislation, hearings planned, 5/27, p.26
Short workweek, method of creating jobs? 6/17, p.62
Strikes abroad supported by U. S. unions, 3/4, p.104
Strikes in Congo trouble nonferrous metalworkers, 1/14, p.24
UAW: Ford and GM agree to meet, 4/22, p.17
UAW-auto companies shoot for early labor pact (targets), 6/10, p.161
UAW: Dues paying members, total net worth, fund balances, 6/10, p.161
UAW-GM agency shop pact, Indiana plants, 6/24, p.112
UAW-Reuther speaks at Detroit Economic Club, 2/11, p.27
UAW-Reuther seeks joint study groups for auto industry, 4/1, p.23; automakers views, 4/8, p.24
UAW: Reuther points problem of untrainables, 5/27, p.18
UAW (Woodcock): Handling gigantic power of some corporations, 2/4, p. 17
USW pamphlet "Shorter Work Week", 1/28, p.18
USW: HRC sessions underway (Has steel industry bargaining really started?), 1/21, p.23
USW: Job security is key topic, 2/18, p.25
USW-McDonald hints short week not an issue, 2/4, p.23
USW (Miller) challenges STEEL's point in Kaiser plan report, 1/28, p.27
USW: Industrial relations exec briefed on Kaiser plan, 2/18, p.25
USW-Ruttenberg (former official) views Kaiser plan, 2/18, p.26 and 5/27, p.26
USW contract seen by Apr., 2/25, p.27 and p.28
USW: Optimism for peaceful contract settlement, 3/25, p.25
USW: Will Kaiser bonus spur union demands? 5/6, p.25
USW: Steelmakers continue HRC talks toward contract, 5/20, p.26
USW-steelmakers close in on contract; union may trade extended vacation for one year contract extension, 6/3, p.25
USW-labor committee approach passed good test, Pittsburgh-Des Moines Steel, 6/24, p.27
USW: Steelmakers continue HRC policy committee meet, 6/17, p.17
USW: Vacation plan, could it work for all firms, employees? 6/24, p.28
Walsh-Healey minimum set for three industries, 1/14, p.23
West Coast proposal: Workers choose earnings-benefits split (cafeteria style), 3/11, p.31

Labor Costs:
AISI: Hourly employment costs, 1940 to 1961, and profit squeeze, 2/25, p.17
Hourly employment costs and unit labor costs (E-R-N), 4/1, p.22

Labor-Management:
Advisory panels fail, union leaders charge, 1/21, p.24
Henning (Labor undersec'y): Push is on for more job guarantee clauses, 3/11, p.100
Human Relations Committee members, steel negotiations, 1/21, p.24
HRC acts on stockpiling, 2/11, p.17
HRC reports, 2/25, p.27
HRC studies NLRB rulings (contracting out, plant shutdowns, job eliminations), 4/1, p.21
HRC: McDonald briefs his committee, 5/13, p.25
HRC: McDonald reports, 5/20, p.26
Industrial relations executives surveyed, 2/4, p.47
Kaiser booklet released on progress sharing (details listed), 1/14, p.23
Kaiser plan, opposition from incentive group employees, 1/21, p.24 (STEEL's report challenged by USW), 1/28, p.27
Kaiser plan, steel executives get briefing, 2/28, p.25
Kaiser progress sharing, will bonus affect labor talks? 5/6, p.25
Kaiser plan will teach USW productivity facts (Ruttenberg addresses incentive conference), 5/27, p.26
More labor-management committees on the way? The 'new look' in labor relations approach studied by groups, 5/13, p.25
T-H labor-management panel revived by Kennedy, 6/3, p.26
Wirtz suggests labor court (Baruch's proposal), 2/25, p.27

Labor Shortages:
Dr. Lawson: Europeans' efficiency and labor shortages, 1/14, p.86

Laboratories: See Research & Development

Lake Port:
Burns Ditch deepwater port, Lake Michigan, gets setback, 2/4, p.18

Laminar Flow (LFC):
Northrop LFC for cutting airplane wings, reduces air friction, 6/10, p.98

Languages:
One language needs cited for use with underdeveloped nations, 2/18, p.20

Lasers:
Airco develops continuous wave laser, 9 watts-power, 5/13, p.88
Ford studies combustion with lasers, 4/29, p.18
GE-solid state units, laser based on gallium arsenide, 1/28, p.20
GE predicts cutting with laser, seeks crystal, 6/24, p.20
Green laser for underwater military needs, 2/18, p.17
Helium-neon laser measures distances between atoms, 4/8, p.20
Laser range finder measures distances (Colidar Mark II), space use, 4/15, p.87
Magnetic tech. for tuning, pulsing, RCA, TO, 6/3, p.20
Plastic laser, RCA, 3/18, p.20
Plastic based laser uses europium (Princeton lab), 3/25, p.76
Powerful beam of light (fireworks) pierce piece of steel, 4/1, p.20
RCA tube unscrambles hundreds of TV channels, (Lasecon), 4/1, p.18
Satellite to use lasser-reflector system, 6/10, p.103
Spectrograph uses optical ruby laser for tests, 4/29, p.20
Sperry ups laser efficiency (pumped by gallium arsenide diodes), 2/18, p.20
Raytheon, most powerful laser, 2/4, p.20
Researchers speak on practicability of laser machine, 4/8, p.71
Watchmakers use, balance wheel, TO, 6/17, p.20
Weld metals with a laser, 3/4, p.20

Latin America:
Machine tool industry expands, 4/22, p.207
Tax incentive lures, 4/22, p.207

Lead:
Lead refiners suffer from limited imports, 3/18, p.29
Lead-zinc problem: How to glamorize a work horse, status of lead-zinc research program, 5/6, p.28

Leasing:
1962 leasing (industries), tax incentive impetus, 1/14, p.19
Brown & Sharpe machine tool leasing, purchase option, 2/4, p. 53
Europe: Renting or leasing boom for consumer goods, 4/1, p.97
Nationwide Leasing sets up 'million dollar plan', 3/4, p.30

Licensing:
A patent attorney looks at licensing, 1/14, p.52
Electrophoretic deposition for coating steel with aluminum, licensee firms, 1/28, p.20
Licenses to trade with Red Bloc granted by Commerce in 1959-'62, 3/18, p.29
Nylok Corp.: Licensing can be profitable, 1/14, p.49

Lighting:
Mercury vapor lighting, Rockwell plant, 5/27, p.94
See also Electroluminescence

Logistics Management Institute:
Weighted guidelines proposed to determine profits for negotiated defense contracts, 2/25, p.25

Lubricants, Lubrication:
Aluminum lubricants revealed by GE lab, 1/28, p.30
Coolant clarifier ends calender roll tailmarks, 6/10, p.117
Cutting fluids employed in chem machining sold as fertilizer, 1/28, p.20 and 2/4, p.20
Cutting fluid (multipurpose), sulfurized mineral lard, 2/4, p.40
Dry lube, Tungsten diselenide, for space tests, 6/3, p.60
Glass powder additives, strong lubricating film for cutting tools, 5/13, p.20
Hydrostatic bearing uses viscosity lube, 5/20, p.71
Paste, lubricant for hot extrusion, TO, 6/10, p.20
Porous chromium plate holds plastic lubricant (Vanderlube), 4/1, p.52
Resin bonded dry film lubricants for Army vehicles, 2/11, p.20

M

Machine Tool Industry:
AMTDA business forecast (meeting), 4/15, p.26
ASTME tool exposition, highlights of conference, 4/22, p.137
Automakers quality capability studies, 5/13, p.137
Bausch & Lomb gets ready for optical measuring, 5/20, p.60
Brown & Sharpe leasing plan with purchase option, 2/4, p.53
CIP (cost improvement program) saves millions in tooling, setup, 1/21, p.36
C.O.S.T. (co-ordination of spindletype tooling), marketing program for Scully-Jones salesmen, 4/8, p.60
Foreign imports, exports, 1/28, p.95
GE manufacturing men air equipment needs, 5/20, p.69
GE-Myerholtz addresses NMTBA on a system approach, 5/27, p.81
Gidding & Lewis to sell its foreign built tools here, 3/4, p.29
Giddings & Lewis 'instant' delivery (market-anticipation program), 4/8, p.25
Kearney & Trecker Cash-Flo payment plan, 3/4, p.106
Machine tool orders surge, 4/1, p.93
NMTBA meeting, outsiders asked to comment on industry future, 5/6, p.28
NMTBA to fight wage rule (Walsh-Healey), 5/27, p.17
U. S. Commerce trade mission notes Japanese market good for tools, 1/14, p.25
Westinghouse Forum, speakers, 6/17, p.18

Machine Tools & Attachments:
Heald interchangeable workholding fixtures and spindle plates, 2/4, p.41
Heald Bore-Matic has gun drill, 2/11, p. 92
Lathes rebuilt for hydraulic tracer control, 2/11, p.92
Low cost horizontal milling machine, 2/18, p.28
Monarch lathe used by 'farmer turned entrepreneur,' 2/25, p.32
Optical measuring systems on machine tools and gaging equipment, 5/20, p.60
Postprocessors (programers) speed tape contouring, 1/14, p.40
Vertical mill in small machining jobs, 1/21, p.48

Machinery & Allied Products Institute:
Terborgh: Tax incentives boost earning power of investment dollar, 1/7, p.154

Machinery Dealers' National Association:
Chicago meeting: Used machinery sales report, 5/27, p.27
Elects, B, 6/17, p.35

Machining:
'Ballizing,' hole finishing process, 4/8, p.59
Buhr dial machine processes four cast iron manifolds for GM engines, 2/18, p.59
Chatter studied by AF, 4/8, p.27
Chatter and vibration in machine boring-turning ended with unit, 5/13, p.73
Climb milling, TO, 5/20, p.20
Electrolytic machining equipment, Anocut debut, 2/11, p.17
Electrolytic lathe (pic) machines forgings, 3/25, p.33
Finishes, tolerances tied to production costs, 2/18, p.56
Heavy duty machining with abrasives, 4/8, p.26
Piggyback cutting tool (Chinese) does hot machining, TO, 5/13, p.20
Shear spinning operations, 1/21, p.34
Short run machining savings (automatic tape control), 2/18, p.58
Short run problems solved with tooling-preset and quick change (Insta-Set) system, 6/24, p.72

Magnesium:
Magnesium bowling pins, 3/18, p.17

Magnesium Assn.:
Elects, B, 6/17, p.35

Magnets:
MHD generators with superconducting magnet, 1/14, p.17
Permanent magnet with memory and on-off feature, 2/18, p.66
Permanent magnets improved with casting tech., 4/8, p.20
Small (19 lb) superconducting magnet, 5/20, p.70

Maintenance:
Broader maintenance skills needed with advanced equipment reports GE-Clover, 6/17, p.84

Maintenance Show:
See Plant Engineering & Maintenance

Malleable Founders Society:
Elects, B, 6/17, p.35
Malleable castings sales, '63 forecast, 6/17, p.17

Management:
Cites need for better manpower management (Rosow at Chicago conference), 4/1, p.25
How to counter employee resistance to change (Dr. Laitin), 3/11, p.29
How to organize to exploit big new markets, 3/4, p.49
Industrial relations (personnel) performance gaged to company profits, 2/18, p.26
International management, Manila conference speakers, 1/7, p.289
Manager with specialty most in demand, 4/22, p.27
Managers for the big new markets, new breed, 3/18, p.95
Manager's role spells computer success, 4/22, p.31
Personnel's changing role spelled out at conference, 2/4, p.25
Profile of metalworking presidents (statistical chart), 1/28, p.61
Supervisors unfit for jobs (Maintenance Show speaker), 2/11, p.112
TV 'performers' urged by Hagerty, ABC, 2/4, p.86
What metalworking managers expect (survey): Problems getting top priority, 6/17, p.25

Management (Council for International Progress):
Eric Johnson: U. S. not ready for economic clash with Common Market, 2/18, p.102

Management Systems:
Automated Operations Control (Northrop shop transactions), 4/15, p.20
Cost Improvement Program (Hughes Aircraft), 1/21, p.36
C.O.S.T. (coordination of spindletype tooling) at Scully-Jones, 4/8, p.60
EDP used in purchasing, 4/29, p.49
How to automate a steel plant, England (RT&B): Management

organization chart-computer system, 1/14, p.42
CPM, PERT, cost and timesaving tools, 1/7, p.131
PERT for marketing problems, 1/7, p.158
Postprocessor (programing) speeds tape contouring, 1/14, p.40
Systems Engineering, one route to better quality: Feigenbaum speaks at ASQC, 6/3, p.29
Systems concept worked in computer installation, Sara Lee Kitchens, 6/17, p.28

Manganese:
Hardening manganese steel, new process, 3/18, p.106
Manganese import quotas sought by metal producers, 6/3, p.28

Manpower:
1st annual manpower report of the President (apprenticeship programs inadequate for tool-die makers), 3/25, p.83
Calif. retraining programs, 4/15, p.92
Fluid power manpower shortage, survey, 6/17, p.29
NASA charged by Sen. Bennett with hiring coercion, 5/20, p.18; reply Smith (NASA recruiter), 6/3, p.18
Rosow (Standard Oil): Cites need for better manpower management, 4/1, p.24
SRI study: Machines plus teacher, good retraining, 5/6, p.93
Wheeling Steel's chief stresses manpower needs at AISI meeting, 5/27, p.24

Marketing:
AMA speaker: Coordinate new products programs, how to organize, 4/22, p.29
Analysis of small account and small order problem, 1/7, p.161
Clothes dryers: Industrywide promotion campaign, 2/4, p.47
C.O.S.T. marketing system for toolmaker (Scully-Jones), 4/8, p.60
Don't spill profits getting to market, 1/7, p.157
Glynn (Howard Monk Associates): Pretesting programs prevent marketing flops, 4/15, p.124
Organization strategy foundation for attack on big new markets, 3/4, p.49
PERT for marketing problems, 1/7, p.158
Quality assurance service sharpens competitive edge (reliability IDQA), Standard Pressed Steel, 1/28, p.53
Selling the new markets, editorial, 1/28, p.15
Stainless steel firms face selling task, 4/22, p.29

Markets (Big, new markets of '60s):
See STEEL Features

Marking:
Tagging system key to savings, 1/28, p.49

Massachusetts Institute of Technology:
Concept of computer - engineer, man - machine designing team, 6/24, p.70

Material Handling Industry:
The neglected cost of material handling (feature story), 2/11, p.85
1963 sales forecast, 6/10, p.18
Exports of material handling equipment, 6/17, p.19
Industrial trucks, foreign competition, service and maintenance problems, 6/24, p.119

Conveyors:
Pressure casting line automated (steel wheels), 3/4, p.62

Cranes, Hoists:
Overhead cranes equipped to weigh steel in unloading process, 1/14, p.27
Stacker crane (Wean Mfg.) works storage area, 1/21, p.39

Pallets:
Load 'floats' into trailer van (Load Glide Air-In-Floor), 3/25, p.81

(Robots)
Robot hands reach conventional jobs at Unimation Inc., 2/25, p.48

Trucks, Gas & Electric:
Stick drive on Omni-Drive, 1/28, p.88

Material Handling Institute:
Chicago-Midwest Show, optimism rampant, 6/10, p.28

Materials Report:
Alloy (Hastelloy) anchors hold furnace refractory, 6/17, p.74
Alloy plus stainless gives composite saving (bar), propeller shaft for outboard motor, 5/27, p.86
Basic materials facts reviewed by scientists at Boston seminar, 1/28, p.58
Brazed honeycomb goes commercial (Bridgeport Brass), 2/25, p.56
CF&I activates parallel wide flange beam mill, 2/18, p.62
Charging machine cuts open hearth load cycle, 2/4, p.44
Cheap way to recover L-D converter gas, 1/7, p.166
Coal injection system moves fuel by air (B&W), 3/4, p.60
Computers cut steel costs, market for 4000 units, 2/11, p.98
Continuous steelmaking bit closer (Australia's Dr. Worner's views), 6/3, p.64
Designers push for new materials, 5/13, p.63
Higher iron rates with pellet use tallied, 1/21, p.44
Metal foams produced with refractory methods, 5/20, p.65
Molybdenum silicide heating element, 1/28, p.58
New forms of carbon improve insulation, 5/6, p.76
New blooming mill levels steel capacity (Atlantic Steel), 3/11, p.60
New mill (combination slabbing and plate) eases pressure at Houston steel plant (Sheffield), 6/24, p.74
New process hardens manganese steel, 3/18, p.106
New stainless (Checkwate 8) used for standard weights, 4/22, p.140
Nippon planetary mill has one planetary roll for lower cost, 1/14, p.46
Plastic based laser uses europium (Princeton lab), 3/25, p.76
Porous chromium plate holds plastic lubricant, 4/1, p.52
Rotor furnace, ways to hike output, 4/15, p.74
Test tightens measure of corrosion rates, 4/8, p.64
USS blast furnace has third bell, Duquesne, 6/10, p.104
Variety of shapes gets fast anneal (Firth Sterling atmosphere controlled furnace), 5/13, p.74
Vertical strip motion simplifies gage unit, 4/29, p.52

Mergers:
Metalworking mergers in '62, FTC report based on Moody and Standard & Poor, 2/18, p.28

Metal Cleaning, Finishing:
Glass bead peening cleans metal parts, 6/10, p.109
Unit cleans and machines metal parts simultaneously, 2/4, p.20

Metal Deposition:
Aluminum on steel (electrophoretic process) dev. by BISRA, licensees listed, 1/28, p.20

Metal Fibers:
Designers push materials, new technological changes, 5/13, p.63
Melted fiber in form of bonded product (Feltmetal) like felt or paper, 2/11, p.98
Research shows heat resistance of metal fiber structure (cover), 5/13, p.62

Metal Foams:
Metal foams produced with refractory methods, 5/20, p.65

Metallurgy:
Electronic 'picture' studies metal composition, 1/14, p.20
High temperature oxidation, TO, 6/24, p.20
Metal fatigue failure signalled by noise, researchers report, 5/20, p.31
Metal structures studied hot in miniature vacuum furnace, 4/1, p.52
Micrograph analysis with computer, 1/28, p.54
Ultraviolet light for inspection of hot materials, 1/28, p.20

Metalworking:
2 in 3 plants gone five years hence (productivity measurement), 1/28, p.98
4 pennies from each cost dollar add 40c to profit dollar, 1/7, p.129
Big new markets of sixties (See STEEL Features)
Companies fastest growing (chart), all new market seekers, 2/4, p.32
1962 earnings, profits (dollar level improved) chart, 2/25, p.99
1962 earnings vs '61, (Nat'l Bk. of N. Y.), 3/25, p.17
1963 equipment buying (presidents surveyed), 1/14, p.21
1963 orders—show of strength hikes optimism, 3/4, p.25
1963-2nd quarter profits (chart), 5/13, p.28
Sales at record high, employment up, 6/17, p.113
Metalworkers bullish on world market opportunities, 3/11, p.25
Metal producers seek quotas on manganese, chrome imports, 6/3, p.28
Organizing to exploit big, new markets, 3/4, p.49
Presidential profiles (statistical chart), 1/28, p.61
Price fixing indictments by N. Y. grand jury (firms), 4/8, p.24
What metalworkers expect (semi-annual survey): Problems getting top priority 6/17, p.25
What metalworking managers expect in 2nd half, 6/24, p.63

Metric System:
ASTM adds metric data to publications to remove barrier to U. S. foreign trade, 3/11, p.31

Mexico:
Fresh water plant, distillation system, 3/18, p.19
Profit sharing law, 1/28, p.95

Midwest Research Institute:
Space technological ideas, 5/20, p.59

Milwaukee Association of Commerce:
Survey—firms see sales gains in '63, 3/11, p.93

Missiles & Rockets:
See Space Technology

Motion Pictures:
Color film, "Magnetic field spark chamber studies" Argonne Nat'l Lab, Switzerland, 4/29, p.107

N

National Aeronautics & Space Adm.
Ames Research Center: Ultrasound boosts electroforming quality (nickel coatings), 6/3, p.67
Antenna to link earth with SYNCOM satellite, 2/4, p.53
Award to Rohr for antenna system, Calif., 3/11, p.68
Coatings needed to protect refractories (space vehicles), 6/3, p.70
Fact book, computer compiled, for parts list, Huntsville, Ala., 3/4, p.72
Fong: Wanted—more industry use of space-generated ideas, 5/20, p.59
Ideas sought for experiments on life support systems, 6/10, p.31
Laser beam-reflector system for satellite, 6/10, p.103
Manpower raid (hiring practices coercion) charged by Sen. Bennett, 5/20, p.18; Smith (NASA) replies, 6/3, p.18
Dr. Silverstein (Lewis Research): Reliability in space effort our biggest problem, 4/8, p.106
Simpson named to technological post, 4/1, p.24
To study need for practical satellites, 4/1, p.61

National Association of Corrosion Engineers:
Fiberglas reinforced plastic market forecast, 4/8, p.73

National Association of Purchasing Agents:
Atlantic City convention speakers announced, 2/18, p.35
Conference speaker (Gainsbrugh): Why business will stay high in '63, 6/10, p.25
Conference speaker (Weikel): Invites research projects, 6/10, p.27
Evaluation of Supplier Performance, booklet, 4/8, p.68
How PAs see price trends shaping up for rest of '63, 6/10, p.26

National Bureau of Standards:
Computer speeds micrograph analysis, 1/28, p.54

National Fluid Power Assn.:
Spring meeting, elects Maha president, 5/13, p.33

National Foreign Trade Council:
Elects president, B, 1/7, p.35
Elects, B, 3/18, p.35

National Industrial Conference Board:
Dividends build investor confidence, 1/28, p.19
Elects Palmer president, 1/7, p.35
Firms set up formalized capital spending programs, 4/1, p.24
Gainsbrugh at NAPA: Consumer and government buying keeps business high through '63, 6/10, p.25
Meeting: Crackdowns foreseen on reciprocity, joint ventures, 3/18, p.27
Meeting: Presidents panel predicts uptrends in three major markets, 3/25, p.26
Meeting: Reappraisal of 'soaring sixties,' 5/20, p.25
Pretax profits—1st half predicted, 1/7, p.18
Upper income market increased, 6/10, p.18

National Machine Tool Builders Assn.:
Ask for permanent R&D group, 3/11, p.67
Builders ask 'outsiders'—what's in the future for the industry?,' Diebold Group Inc. answers, 5/6, p.28
GE manufacturing men air equipment needs, 5/20, p.69
GE-Myerholtz address: System approach urged, 5/27, p.81
Walsh-Healey wage ruling challenged, 5/27, p.17

National Metal Trades Assn.:
Predict steel settlement by Apr., 2/25, p.28
Survey of industrial relations executives: How long should a labor contract run, 2/4, p.47

National Science Foundation:
Government R&D spending in '63, survey, 1/7, p.29

Navy:
Oceanography program, 5/27, p.77
Titanium for submarines? 6/17, p.79
New Markets: See STEEL Features

New York University:
Drucker: Attacks nonselective use of computers, 3/18, p.180

New Zealand:
Hydroelectric facility, glaciers power, 5/13, p.145

Nitrogen:
Forecasts plants for sole purpose of producing cheap nitrogen (cooling purposes), 5/6, p.20

Nodular Iron:
Chevrolet to use more nodular iron, 3/18, p.169

Noise:
Researchers say noise signals metal failure, 5/20, p.31

Nonferrous:
1963 steady prices predicted, 3/25, p.29
Aluminum, copper producers predict '63 sales, 1/7, p.31
Aluminum, copper, two forecasts for Free World supply-consumption, 5/6, p.93
Inventory buildup, 3/4, p.27
Lead, zinc shipments, 1/7, p.31
Lead price hike, 1/21, p.67
Lead, zinc use heavier with automotive, 5/6, p.115
Manganese, chrome import quotas sought by metal producers, 6/3, p.28
Silver price heads toward $1.29 ceiling, 1/21, p.26
Silver legislation, effects, 6/3, p.28
Strikes, Congo brings problems to nonferrous industry, 1/14, p.24

Northwestern University:
Computer and Information Sciences symposium, 6/24, p.30

Nuclear Power: See Atomic Energy

Numerical Controls:
ADAPT system for numerical control, 4/1, p.20
AMTDA and NMTBA sponsor NC course for managers, 1/28, p.56
ASTME interest high, 5/13, p.89
NUCOM, new system employs mechanical and pneumatic rather than electronic elements, TO, 5/13, p.20
Postprocessor (Gecent) speeds tape contouring, 1/14, p.40
Preparation of tapes now done by machinists, 4/15, p.33
Punched cards will operate English press and manipulator, 1/14, p.39
Tape guided turret press, Cutler-Hammer's new numerical control positioning system, 3/4, p.57

O

Ocean:
Navy oceanographic program, 5/27, p.77
Ultrasonic thermometer pinpoints ocean temperatures, 4/15, p.18

Office of Emergency Planning: See Stockpiles

Open Hearths: See Steelmaking

Optical Measuring: See Inspection

Order Processing:
Automated process speeds Bethlehem order entry, 4/8, p.63
Customer service dept. fills small orders at Aluminum Extrusions, 3/11, p.65
Standard Pressed Steel data processing system, 2/18, p.60
Warehouse handles order a minute (Colgate-Palmolive, Ind. plant), 3/25, p.72

Oriental Maverick: See Japan

Organization for Economic Cooperation & Development:
Factors of investment behavior and rates of economic growth, 2/4, p.51

Organizing: See Management

Outboard Motors:
Alloy plus stainless (two steels in one bar) for propeller shaft, 5/27, p.86

Overseas: See Foreign

Oxygen Furnaces:
Allegheny Ludlum adds two, 2/25, p.31
Nippon Kokan L-D computer control, 4/8, p.23
Pittsburgh Steel contracts, 4/29, p.30
Republic Steel to install six basic oxygen furnaces, 4/1, p.27

Oxygen Processes: See Steelmaking

P

Packaging, Containers:
AMA packaging conference: Metals or composites? 4/29, p.25
Bill requires marking containers with country of origin if made of foreign steel, 2/25, p.18
ECM markets for U. S. packaging equipment, 6/10, p.29
Plastic fused to interior of steel shipping containers, 2/25, p.51

Patents:
A patent attorney looks at licensing, 1/14, p.52
AEC releases patents for public use, 1/14, p.20
East Germans offer patents for sales to West, some are suspicious, 4/29, p.87
Employee inventor patent rights, bill introduced, 4/22, p.142
Liberalization of government patent regulations in line with Defense Dept. policy expected, 1/28, p.56
Nylok fastener patents, 1/14, p.49
Safety device prevents explosions in oil or gas containers, 4/29, p.20

Peening:
Glass bead peening, metal parts, 6/10, p.109

Pellets:
Aluminum pellets to sheet in one step (Reynolds), cover story, 4/1, p.39
Higher iron rates with pellet use tallied, 1/21, p.44
Low grade ore processed by new Canadian method, 1/21, p.50

Pensions:
Assets and reserves of private welfare and pension plans, 4/1, p.23
Rising cost of employee pension, welfare funds, social security, (1930-'62), 1/21, p.19

Personnel & Executive Conference:
Michelon (Republic) speaker: Personnel's changing role, 2/4, p.25

Philippine Islands:
Chromite deposit uncovered by AID, 6/17, p.118

Photography:
Plastic logic components formed photographically, 1/21, p.46

Pipelines:
Iron ore slurry pipeline from mine to mill (Costantini suggests), 1/28, p.30
Material pipeline contract award, 1/21, p.57
Welding transition pipes to pipeline valve in shop instead of in the field, 3/4, p.72

Pipe, Tubing, Fittings:
Pipe coupling quality upped by eddy current unit, (electronic detection), 6/3, p.68
Plastic coated steel tubing for gas connections, 3/25, p.80
Precision tubing cold formed (Flo-Rol) in steel and nonferrous metals, 1/21, p.42
Smooth finish for stainless steel tubing, 3/18, p.108

Plant Design:
Efficient layout increases assembly (Tuttle & Bolley), 4/8, p.69
Future plants, men and machines separation, 2/4, p.42

Plant Engineering & Maintenance:
Chicago Show provides tips for upgrading plant maintenance function, 2/4, p.26
Conference speaker (McCarthy): Picking supervisors, weed out unfit, 2/11, p.112

Plant Expansions & Developments:
Amax '63 plans for capital expenditures, 1/28, p.31
Armco slab-plate mill, Houston, 6/10, p.33
Austin plant, new automatic tools, 3/11, p.69
Bethlehem awards contracts for Burns Harbor facilities, 5/20, p.33
Budd Co. expansion $15 million, Automotive Div., 3/11, p.31
GM capital spending, home and abroad, 2/25, p.26
Kennecott Copper, $100 million, 2/25, p.30
Latrobe begins $14 million expansion, 3/11, p.33
Republic facilities improvement, 5/20, p.33
Steel firms plan facilities improvements, 1/7, p.33
Youngstown Sheet & Tube, Chicago area plants, 3/11, p.68
Youngstown Sheet & Tube plans 80 in. sheet mill, Indiana Harbor, 6/3, p.26

Plant Security:
Ultrasonic burglar alarm, 2/4, p.20

Plasma Torch:
Czech arc plasma torch runs on water, 3/4, p.20
Czechs laud plasma cutting, 6/17, p.82
French plasma generator produces high temperatures, 3/4, p.20
Plasma beam, hotter than sun, 5/20, p.31

Plastics:
Ablative coatings resist missile heat, 6/3, p.31
Ablative plastic makes better insulator coating, 6/3, p.73
Aromatic polyimides resist heat, TO, 6/17, p.20
Chrome plated plastic parts, 4/8, p.18
Copper clad laminated plastic can be punched (RCA printed wiring boards), 4/1, p.52
Design engineers, plastics usage, 2/11, p.29
Encapsulation materials (plastic jackets), Nalcon, 6/24, p.32
Fiberglas reinforced plastic (GRP), report, 2/11, p.29
Fiberglas reinforced plastic market, '68 forecast, 4/8, p.73
French (Stafluid) method coats cold parts with cold plastic powder, 6/3, p.31
Loctite sealant (liquid plastic) for bearing shafts, 1/28, p.48
Nails coated with polymer (liquid epoxy glue), 3/18, p.20
Plastic armor developed at Aerojet, (AGC Type II), 4/8, p.26
Plastic coated steel tubing in coils, 3/25, p.80
Plastic-corrosion protection for metal edges, TO, 6/10, p.20
Plastic fasteners hold, seal, and insulate trim, 3/25, p.78
Plastic foams make good patterns for castings, 4/1, p.20
Plastic injection molds, large parts, 5/27, p.94
Plastic lubricant for porous chromium plate, 4/1, p.52
Plastic for petroleum tank bottoms, 2/11, p.20
Plastic lasers, 3/25, p.76
Polymer SP resists 1000° F, TO, 5/6, p.20
Railroad tank car shell, Poxyglas, 4/15, p.35
Reinforced plastic shell for transformer housing, 3/11, p.62
Steel shipping containers, lined with seamless plastic, TO, 5/6, p.20
Steel shipping containers, plastic fused on interiors, 2/25, p.51
Teflon farm plow, 1/28, p.20
Thermoplastic impact strength test resembles metals, 3/11, p.20
Thermoplastic laminate called 'Expanded Royalite' developed by U. S. Rubber (auto and truck uses), 5/20, p.55
Urethane (ElastaCast) plastic aids rubber pad forming, 4/22, p.139
Vinyl foam coating protects metal parts (Unichrome Plastisol 4417), 3/11, p.63
See also Automotive

Plate Mills:
Armco's slab-plate mill, Houston, 6/10, p.33

Plating: See Electroplating, Plating

Politics:
Purdue study: Businessmen set opinions on political matters, 2/4, p.48

Powder Metallurgy:
1963 conference and show, exhibits, 5/6, p.31
Czechs follow U. S. in powder metal growth, 1/7, p.168
Foams of metal and refractories, process, 5/20, p.65
High density alloys, 1/7, p.168
Monsanto enters copper powder field (hydrometallurgical refining process), 6/10, p.124

Power Sources:
Listed, new power sources for new markets, 1/21, p.15
See also Electric Power
See also Solar Energy

Presidents: See Management

Presses:
Big powder press, Sylvania's Towanda plant, 4/8, p.25
Briquetting press, pic., 1/21, p.30
Forging press (English) and manipulator operated by punched cards, 1/14, p.39
Forge press, preset cycle, 4/15, p.73
Hot forming press, close temperature control, 3/4, p.33
Stamping press (refrigeration fins), 2/25, p.54

Pressure Vessels:
Manipulator for 35 ft welds, 1/28, p.49
Shear spinning makes thinner vessels, 1/21, p.33
Steel capsule for AEC project, 3/4, p.69

Price Fixing:
Metalworking firms indicted by N. Y. jury, 4/8, p.24

Prices:
Aluminum ingot, will prices follow other increases? 5/27, p.27
Chromium alloy adjustments, 2/4, p.57
Competition in steel holds prices in line, 4/29, p.24
Platinum, palladium reductions, 4/8, p.87
Seamless pipe reductions, Allegheny Ludlum, 3/25, p.33
Steel increases (Wheeling), 4/15, p.28
Steel hikes, can they survive all tests? 4/22, p.25
U. S. Steel cuts stainless prices, 2/25, p.87
World price comparison on steel (Japan, British, U. S.), 1/21, p.82

Process Controls: See Computers

Procurement (Government): See Defense Contracts

Product Development:
AMF and Harris-Intertype programs, 2/4, p.35 and 37
Converting new products into gold mines (Peter Hilton), 3/11, p.100
Editorial: Selling the new markets, 1/28, p.15
Put value analysis into new product introductions, 1/7, p.159

Production:
1962 ingots and steel castings, 1/21, p.57
Plastic raw materials, 2/11, p.18
World steel (chart) countries, 2/11, p.174 and 5/27, p.23
World steel (Russian output nears U. S.), 2/18, p.29

Production Costs:
Don't loose your profits in finishes, tolerances, 2/18, p.56
Tighten tolerances on production costs, 1/7, p.149

Production Control:
Japanese carmaker (Toyo Kogo) automates production control system, 6/10, p.100

Productivity:
Is productivity rise offsetting wage hikes? Eddy - Rucker - Nickels (table), 4/1, p.22
Kaiser plan will teach USW productivity facts (Ruttenberg address), 5/27, p.26
Productivity measurement (2 in 3 metalworking plants fail in five years), 1/28, p.98

Profit Formula: See Defense Contracts

Profits:
1963 metalworking: 4 cents from '63 cost dollar add 40 cents to profit dollar, 1/7, p.157
How to join the profitmakers (special issue), 1/7
U. S. Steel: Only profits solve unemployment, 3/25, p.28

Public Affairs: See Politics

Pumps:
Pump for liquid metals, 3/18, p.18

Punched Cards: See Numerical Controls

Punching:
Copper clad laminated plastic can be punched (RCA), 4/1, p.52

Purchasing:
Airline road show searches for purchasing bargains, 3/18, p.28
Audit your purchasing for greater profits, 1/7, p.141
Buying is more than spending (competitive bidding), 1/7, p.139
GE McAleer: How purchasing agents can make standards pay off, 3/11, p.28
If you have purchasing problems check team buying, Holley Carburetor Co., 4/29, p.48
Kaiser's blank checks to venders cut purchasing paperwork cost, 3/4, p.30
Purchasers' goals: Value, function buying (Sylvania's Finley), 1/7, p.292

Purchasing Agents: See NAPA

Q

Quality Control:
Machine capability studies (Timken), 6/17, p.29
Machines to inspect quality info, TO, 5/27, p.20
'Prevention work' lowers quality cost, 5/27, p.98
Quality Assurance-customer service, (IDQA), 1/28, p.56
Quality information equipment stressed at ASQC conference, 6/10, p.119
Systems engineering, route to better quality (Feigenbaum addresses meeting), 6/3, p.29

R

Radio, Television:
Closed circuit TV (Russia) monitors pipe welds, 1/21, p.20

Radio remote control directs slag removal, 4/22, p.35
TV camera tubes for x-ray motion study, 2/11, p.119

Radioisotopes:
Industry report: New tools, new markets, 3/18, p.29

Railroads:
Capital expenditures, 3/18, p.18 and 4/29, p.18
Tank car shell of glass reinforced plastic, 4/15, p.35
See also Freight Cars, Freight Rates

Rare Earths:
Didymium metal, lower priced at Ronson, 6/24, p.76

Reduction Plants:
Aluminum plant, Tennessee, readied by CAC (Swiss affiliate), 2/18, p.33
Forecasts sonic energy for ore reduction, 4/29, p.28

Refineries: See Smelting, Refining

Refractories:
Alloy-Hastelloy X anchors hold furnace refractory, 6/17, p.74
Basics in use of higher temperatures, 1/14, p.37
Basic brick, new type 'direct bonded' stronger when hot, 6/17, p.80
Design change on refractory cover for furnaces, 4/22, p.140

Refractory Metals:
Carborundum blows steam against molten ceramic to make refractory fibers (cover), 1/14, p.34
Definition of refractory materials, 1/14, p.35
Deep drawing of refractory metals, researched, TO, 6/24, p.20
GE's new Cleveland plant, equipment and production, 5/13, p.31
Metal foams (powder material) produced with refractory methods, 5/20, p.65
Refractory makers find new ways to manage heat (feature article), 1/14, p.35
Spongy refractory (Russia), 1/14, p.20

Reliability:
IDQA (Individual Documented Quality Assurance) program Standard Pressed Steel, 1/28, p.53

Research & Development:
Administration's incentive proposals, 1/28, p.25
Administration's proposal — $50 million tax break plus direct grants (Holomon heads program), 2/4, p.21
Anaconda American Brass program: Planning the research route to profits, 2/25, p.43
ASTME sets up grants for manufacturing study, 3/11, p.67
Dockson urges private business to boost R&D spending, 2/4, p.86
Dr. Moore (ICRA): How to get more from research, 6/3, p.53
European research and ours, differences, 4/8, p.22
Europe's research competitive, 4/15, p.27
Federal R&D obligations in '63, NSF survey, 1/7, p.29
Industrial systems research at U. of Mich. lab, 5/6, p.83
Lead-zinc research status, 5/6, p.28
Locating research labs, people factors, 4/15, p.93
Metals research (Dr. Suits-GE) warns steelmakers, 5/27, p.24
NMTBA seeks permanent R&D group, 3/11, p.67
NRCST center aids scientists in locating information, data system, 4/8, p.69
Planning the research route to profit, 2/25, p.42
SKF lab, bearings problems, 6/17, p.33

Resistance Welder Manufacturers' Assn.:
Elects, B, 1/21, p.30

Retirement:
Youngstown Sheet & Tube sets mandatory retirement, 2/4, p.48

Road Shows:
Trans World Airlines: Road show searches for purchasing bargains, 3/18, p.28

Roads: See Highways

Rolling Mills:
Japan's Daido planetary mill, 1/14, p.46
New rolling mill (Taylor) to roll thin tin, 4/15, p.17
New tech.: Rolls heated to red heat to make strip, 3/18, p.20
Reynolds unveils new process for rolling aluminum sheet, 3/4, p.30
Roll forging, Holub process, at Czech auto plant, 5/6, p.72
Transverse rolling, Holub process (Prague) for heated billets, 2/11, p.20
Ukraine, automated mill, 6/17, p.76

Rubber:
Dunlop of Canada, new lightweight rubber-EPT, 2/4, p.53
Expanded Royalite, new plastic for trailer bodies, 5/20, p.55
Rubber draw die, no scratch, 2/11, p.93

Rundt Report:
U. S. unions support strikes abroad, 3/4, p.104

Russia:
Article feature: The Soviet economic offensive (trading trends), 2/18, p.51
1962 economic report, 2/11, p.173
Ausform via extrusion, 3/18, p.20
Automated rolling mill, Ukraine, 6/17, p.76
Blast furnace, world's biggest claimed, TO, 5/13, p.20
Blooming mill, Cheliabinsk Eng. Wks., 6/17, p.117
Chrome dumped in Europe by Soviets, 4/8, p.24
Chrome price cuts threaten African firms, 2/18, p.99
Compact car, Zaporozhets, 2/18, p.99
Continuous casting license sought by U. S. firms, 6/17, p.29
Foaming coke and graphite study, TO, 4/22, p.20
Gears made by hot knurling, 2/25, p.20
Glass for auto construction, TO, 6/17, p.20
Great Britain No. 1 trading partner, 1/14, p.84
Induction and vacuum heat treating furnaces exhibited, 3/18, p.20
L-D converter plant in Lipotsk rumored, 2/4, p.83
Machine tools-metal cutting output, 1/14, p.83
Manned space missions forecast, 6/24, p.119
Merchant fleet threatens U. S., 5/27, p.18
Metals vacuum rolled, TO, 3/11, p.20
Nonferrous castings, liquid state heat treating, 2/25, p.20
Production vs U. S., 5/20, p.17
Rolling mill (Urals) to roll strip at 60 mph, 3/4, p.20
Roll molten metal, TO, 6/24, p.20
Scientist (Veinberg) describes solar power plant designs, 4/1, p.18
Space journal advocates raising chickens in spaceships, 1/29, p.95
Sputnik metal analyzed, 1/21, p.20
Steel consumption. Red Bloc nations, 2/11, p.174
Steel consumption (countries), 2/11, p.174
Steel output in '62 short of target, 2/4, p.83
Steel production increases, oxygen expansions, 4/1, p.98
Steel, productivity hikes seen for '63, 3/18, p.27
Tube rolling controlled automatically, 5/6, p.129
Welding experts visit Russia: Labor shortages spur technology, 3/11, p.100

S

St. Lawrence Seaway:
Income from tolls behind estimates, 3/25, p.82

Safety:
Safe containers for spent nuclear fuel elements, 6/10, p.175
Safety monitor for liquids contamination, TO, 5/13, p.20

Salaries:
Engineers' median salaries, 3/11, p.66
Engineers vs nontechnical jobs, percentage gap, 3/18, p.18
Engineers, industry and government, 4/22, p.19
Europe's whitecollar salaries, comparison by countries, 2/4, p.83

Salesmen:
Computer aids sales manager, card system, 1/7, p.160
Industrial momism, no aid to salesmen, 1/28, p.98

Sales Programs: See Marketing

Saws: See Cutting, Shearing

Scales, Weighing:
States urged to adopt uniform weight standards, 4/8, p.71
Steel weighed by overhead crane via digital computer, 1/14, p.27

Scrap:
1962 consumption, iron and steel scrap, 1/21, p.69
BDSA to study problems, 3/11, p.33
Institute meeting, looks to Congress for special research funds, 4/28, p.29
Scrap cutting dock, gantries have powder cutting torches, 6/10, p.115

Screw Measuring Systems:
Bausch & Lomb get ready for optical measuring, 5/20, p.60

Sealants:
Liquid plastic sealant for bearings holds down fretting corrosion, 1/28, p.48
Silicone rubber compound sealer, 5/13, p.72

Service Centers:
See Warehousing, Distribution

Sheet & Strip:
Aluminum sheet, new process at Reynolds, 4/1, p.39
Nickel sheets marketed by Du Pont, 4/8, p.26
Pallet system protects thin aluminum magnet strip during shipment, 4/8, p.58
Sheet flatness measured, 1/14, p.20

Shipments:
Concrete reinforcing steel bars, '62, 1/7, p.260
Finished steel, 1962-1st eleven mos., 1/14, p.18 and '62 mill shipments, 2/11, p.147
Merchant steel bars, '62, 1/7, p.260

Ships, Shipbuilding:
Polaris submarines cleaned ultrasonically underseas, 4/8, p.20
Submarine hulls, high strength steels, TO, 5/27, p.20
Submarines of the future use laser sensors on ocean floor, 5/27, p.79
Submarines of titanium, Navy seeks lighter materials, 6/17, p.79
Swedish turbine tankers, 6/3, p.102
Swedish tanker equipped with pitch propellers, 6/17, p.117
Swedish shipyard, new assembly line, 6/24, p.119

Signal Systems:
Japanese job shop uses signal system for tool room needs, production, 4/29, p.50

Silver: See Nonferrous

Small Business:
Area Redevelopment aims to help firms in government contracts, 4/15, p.93
Exploring new markets (editorial), 2/18, p.15
Finding new markets, new products, 3/4, p.50
Small business forums pay off for Martin Co., 1/7, p.146

Small Lot Stamping Institute:
Merged, B, 1/7, p.35

Smelters, Refineries:
Aluminum smelter, Norway, 3/18, p.35
Aluminum smelter, Ghana, 3/18, p.35
Anaconda extracts alumina from domestic clays, 5/27, p.29
Copper powder, hydrometallurgical refining (Monsanto), 6/10, p.124

Smoke, Smog:
Auto 'afterburner' for smog control tested in Calif., 1/21, p.72 and 5/6, p.89
Auto smog control, 4/8, p.27
Space scientist reports smog problem in earth's upper atmosphere, 3/4, p.67

Society of Automotive Engineers Inc.:
Elects, B, 1/21, p.30
Meeting address, foreign research competitive, Prof. Schmidt, 4/15, p.27

Society of the Plastics Industry Inc.:
Production of plastic raw materials, 2/11, p.18

Solar Energy:
Russian studies, 2/18, p.20
Solar powerplant design described by Soviet scientist, 4/1, p.18

Soldering:
Can seam soldering machine, TO, 5/6, p.20
Metal solder-miniature, TO, 3/18, p.20
Soldering faster with coatings on electrical components, 4/8, p.58

Sonic Energy:
Use forecast for earth moving and ore reduction, 4/29, p.28

Sound: See Ultrasonics

Space Conference (Chicago):
Reports: Demonstrated capability key to space contracts, 5/13, p.27
NASA's Fong: Wanted—more industry use of space-generated ideas, 5/20, p.59

Space Materials & Developments:
Ablative coatings resist missile heat (AC-1, AC-2), 6/3, p.31
Aerospace Research Application Center, Indiana University (newly formed) to speed space knowhow, 1/21, p.28
Agena, shelf-item booster, 6/17, p.18
Alcoa proposes new rocketmaking process, 2/11, p.31
Antenna for SYNCOM satellite (built by Goodyear) is transportable tracking, 2/4, p.53
Antenna system, Calif., contract to Rohr, 3/11, p.68
Arc spotwelder fastens thin bracket to missile, 4/29, p.57
Atlas missile tanks, assembly line, pic., 5/13, p.35
Big new markets of the sixties: ARPA seeks new materials, 5/27, p.77
Big new markets: A-OK west of the moon, 6/10, p.92
Camera coatings protection for Saturn blastoff, 4/22, p.20
Coatings to protect refractories (space vehicles) urgently needed, 6/3, p.70
European communications satellite system (Eurospace), 6/10, p.169
Glass fiber rocket motor casings, 2/25, p.31
Laser-reflector beam system to launch satellite, 6/10, p.103
Man on moon would stimulate business, analysts told, 4/29, p.27
Moon-manned trip possible by '70, 5/6, p.81
Moon, buildings for condensed powder form, TO, 6/17, p.20
Mooncar powered by liquid hydrogen-oxygen, 1/21, p.18
Materials pushed by designers (crystals, fiber metals, etc.), 5/13, p.63
Nickel coatings: Ultrasound boosts electroforming quality, 6/3, p.67
Practical satellites to collect data from remote areas (NASA study), 4/1, p.61
Reliability in space effort, NASA's problem, 4/8, p.106
Reliability, materials, biggest space problems, 5/6, p.79
Reliability improved (vibration, noise, shock damage), TO, 5/27, p.20
Rocket chamber 280 in.-diameter, 3/4, p.69
Satellite of stainless, 3/25, p.20
Satellite temperatures controlled by color paints, TO, 6/3, p.20
Saturn V rocket moved on giant truck, 6/3, p.18
Smog problem in upper atmosphere, 3/4, p.67
Spacecraft moved by huge crawler transports, 2/18, p.18
Spacecraft simulation unit tested at Douglas, 2/11, p.18
Space trains (cover sketch), 6/10, p.92
Tantalum, once spurned, now in list, 2/11, p.90
Titan launching system, stainless wire braid protects fuel lines, 3/25, p.35

Tantalum now on aerospace list, space vehicle material, 2/11, p.90
Tiros weather eye in orbit, TO, 6/3, p.20
Titan III-C to have first stage liftoff thrust, 4/22, p.146
Titanium honeycomb panels, 3/25, p.20
Weightlessness device for simulated tests, 4/29, p.19
Wrench for space repairs, 3/25, p.20

Spinning:
Shear spinning is becoming commercial, 1/21, p.33

Springs:
Tiny spring for electronic computers, TO, 5/6, p.20

Stainless Steel:
AF develops high strength AFC 77, 2/18, p.33
Chart: Producers of stainless steel, products brought up to date, 3/18, p.104; more producers listed, 4/1, p.46
Du Pont bids for stainless market (stainless coating for auto trim), 3/18, p.25
Firms survey stainless users (lack of knowledge on various grades), 4/22, p.29
Heat treating toughens stainless shaver heads (Schick), 3/4, p.71
New stainless (Checkwate 8) used for standard weights, 4/22, p.140
Stainless tubing cold formed (Flo-Rol), 1/21, p.42
Stainless tubing (for antennas) coiled flat for storage, 4/1, p.52
Weight standards urged for States, 4/8, p.71
See also Automotive (use)

Standards:
AWS establishes brazing joints standard test, TO, 6/3, p.20
Gear measurement standard, TO, 5/20, p.20
Lack of international standards reported at conference, 2/25, p.28
McAleer (GE): How purchasing agents can make standards pay off, 3/11, p.28
Stainless steel weight standards urged for States, 4/8, p.71
Stainless new (Checkwate 8) for standards and measuring, 4/22, p.140

Stanford University:
Atom smasher improved by superconductivity, 5/13, p.86
Ceramic tests, 1/14, p.20
Emphasis on graduate training, 1/28, p.98
SRI study: Retraining workers, machine plus teacher, 5/6, p.93

Steel Alloys:
AISI 4130 steel used to forge cylinder caps (Nike launcher), 1/28, p.55
AISI M-4, orientated electrical steel, 4/22, p.140
Aluminum electrical steels, TO, 6/10, p.20
J&L's new low temp. alloy, 1/21, p.29
Lukens' new carbon plate steels, M-Series, 1/21, p.28
Maraging steel progress, TO, 3/11, p.20
SAE 4626, gear steel, 2/4, p.20
Razor blades, stainless or chrome steel? 4/15, p.20
Selenium improves steel, 2/11, p.20
Strain aging and tempering at low temp. improve H-11 steels, Army test, 2/11, p.20

Steel Dumping:
Antidumping amendments, Senators seek, 5/6, p.83
Antidumping amendments could kill international commerce (Graubard), 6/17, p.117
Antidumping hearings on wire rods (Luxembourg, Belgium), 5/20, p.27; and ruling, 6/24, p.28
Belgium dumps rods, Treasury ruling, 3/25, p.153
Charges under fire (products and countries), 3/4, p.28
French pipemakers charged by U. S. Steel, 1/14, p.17
French rod dumping, Treasury rules, 6/10, p.29
Japan dumps stainless sheets, 2/11, p.18
Japanese cold rolled sheets dumped, Columbia - Geneva charge, 4/1, p.24
Kaiser and Bethlehem file charges, 2/11, p.18
U. S. Steel adds Japan to dumping charges (other countries previously named), 1/7, p.28

STEEL (Features):
1. The big new markets of the sixties, 2/4, p.30
2. The Neglected cost of material handling, 2/11, p.85
3. The Soviet economic offensive, 2/18, p.51
4. Planning the research route to profits, 2/25, p.43
5. Foundation for attack on the big new markets (strategy of organization), 3/4, p.49
6. Where computers call the shots best, 3/11, p.48
7. The new breed of managers for the big new markets, 3/18, p.95
8. Process control—Where buttons mean billions, 4/8, p.53
9. Integrated circuitry where it pays to think small (sometimes called microelectronics), 4/29, p.40
10. The booming world of silent sound (ultrasonics), 5/6, p.63
11. Designers push materials to limit, ask for more, (crystals, fiber metal structure, etc.), 5/13, p.63
12. Wanted: Future today, impossible tomorrow (defense markets), 5/27, p.74
13. How to get more from research (ICRA programs-copper products, applications), 6/3, p.53
14. A-OK west of the moon, business forecast, 6/10, p.92
15. What metalworking managers expect in 2nd half, 6/24, p.63

Steel Founders' Society of America:
Elects, B, 2/18, p.35
Survey foundries on shipments of steel castings, 3/11, p.17

Steel Industry:
AISI meeting: Steelmakers take aim at world competition (production, Europe's mills), 5/27, p.23
AISI address (Dr. Suits): You're behind in metals research, 5/27, p.24
Imports (rundown of major sources), 3/18, p.126
Labor talks (see Labor)
Little 3 steelmakers delayed by problems (Arkota, Gulf States, Sovereign), 2/11, p.29
Steel price hikes, can they survive all tests? 4/22, p.25
Strike threat? Small buyers recheck inventories, 4/29, p.23
Steel increases to consumer on 'selective' basis, 4/22, p.27
See also Financial
See also Production

Steelmaking:
Armco's slabbing-plate mill at Houston, eases pressure, 6/24, p.74
Atmosphere controlled furnace (Firth Sterling), fast anneal, 5/13, p.74
Blast furnace (Dorothy-USS) has third bell, Duquesne, 6/10, p.104
Blooming mill and soaking pits levels steel capacity (Atlantic Steel), 3/11, p.60
CF&I activates parallel wide flange beam mill, 2/18, p.62
Carbon furnace insulations, new graphite felt, 5/6, p.76
Charging machine cuts open hearth load cycle (Blaw-Knox), 2/4, p.44
Coal injection (B&W) moves fuel by air, 3/4, p.60
Coal injection, British blast furnace, 1/14, p.48
Continuous casting (see Casting)
Continuous steelmaking bit closer (Australia—Dr. Worner), 6/3, p.64
Electroslag ingot remelt progress, BISRA, 1/14, p.20
Gaugemeter: Mill stand serves to measure strip thickness, 3/11, p.60
Ladle linings dried (electrical heater), 2/18, p.64
Natural gas endorsed as open-hearth fuel, 3/18, p.31
Oxygen (L-D) computer control, Nippon Kokan, 4/8, p.23
Oxygen converter (L-D) gas recovery process (Japan dev.), 1/7, p.166
Oxygen converter, water cooling extends hood life, 6/10, p.120
Oxygen L-D process and capacity, 1962, 1/21, p.27
Oxygen processes and continuous casting highlight technical sessions at AISI, 6/3, p.71
Pelletized ore in blast furnace, 1/21, p.44
Pellets self-fluxing, 3/4, p.62
Pressure pouring, U. S. Steel, 6/17, p.17
Rotor furnace improvements, South African - Vanderbijlpark plant, 4/15, p.74
Vertical strip motion simplifies gage unit (coating thickness-tin plate), 4/29, p.52

Steelmaking Equipment:
Concast-Sendzimir agreement for selling equipment combinations, 1/14, p.27

Steel Mill Controls:
Armco slab-plate mill, computer control (Houston), 6/10, p.33 and 6/24, p.74
Automating a steel plant (management organization chart), RT&B, England, 1/14, p.42
Automation (total) for steel mill 5 to 10 years away, 3/11, p.52
Computer for oxygen steelmaking, Duquesne Wks., 2/25, p.20
Computer operates hot strip mill, McLouth, 2/18, p.31
Computer-process controls (cover story): Where buttons mean billions, 4/8, p.53
Computer to control British mill (Spencer Wks.), 4/29, p.49
Computerized electric furnace, Lukens, 2/25, p.18
Digital control for French hot strip mill, 4/29, p.18
Gaugemeter on English hot strip mill, 3/11, p.62
Japanese mill, computer controls reverse billet mill, 3/11, p.58
Nippon Kokan L-D computer control, 4/8, p.23
SKF's Hofors (Sweden) Wks., automated by electronic data processing system, 4/1, p.27
Thermocouple measures temperatures in furnace, 2/11, p.20

Steel Mill Products:
Export-imports, 1962, 3/18, p.120
Mill shipments of finished steel '62, 2/11, p.147

Steel Mills:
Armco slab-plate mill, Houston, 6/10, p.33 and 6/24, p.74
Bethlehem moves ahead on Indiana mill, 2/25, p.31
Bethlehem's 8 in. bar mill, Pacesetter at Johnstown, Pa., 6/3, p.33
CF&I activates parallel wide flange beam mill, 2/18, p.62
Cuba, Oriente province, 1/7, p.289
Czechoslovakia, near Kosice, rolling mill, 5/27, p.134
India's mill may get U. S. aid, 1/14, p.25
India's Bokaro mill, feasibility study by U. S. Steel, 5/13, p.91
Moroccan mill discussed, 4/15, p.17
Nippon planetary mill, 1/14, p.46
Texas mill to be built by Sovereign Steel, 4/29, p.29
Turkey, structural fabricating plant (Austin contract), 2/11, p.33
YS&T plans 80 in. sheet mill, Indiana Harbor, 6/3, p.26
YS&T expansions, Chicago area, 3/11, p.68
Yugoslavia (Skopije), contracts let, 1/7, p.289

STEEL's Panel of Economic Consultants:
Forecast: 1963 into '64, 4/15, p.25

Steel Service Center Institute:
Welch: Industry report, forecast, 1/21, p.25
Meeting consensus: Business up, profits down, 6/3, p.27

Steel Shipping Containers Institute:
Marking containers if made of foreign steel, 2/25, p.18

Stockpiles:
Aluminum, copper, nickel goals (OEM), 1/14, p.22
Aluminum disposal plan coming, 2/18, p.17
Aluminum industry may have to accept disposal plan, 5/6, p.18
Automakers stockpile aluminum, 4/8, p.17
Cadmium, bill calls for release, 1/28, p.72
Cadmium disposal bill status, 3/11, p.73 and 4/8, p.87
Cadmium stockpile sale lifts producer price, 5/6, p.18
Cadmium disposal program (GSA) angers platers, 5/27, p.29
GSA bid opens for Grade H primary pig aluminum, 3/4, p.18
West Coast importers not stockpiling, 4/1, p.64

Strikes: See Labor

Structural Steel:
1963 outlook for fabricated structural steel, 1/7, p.259

Submarines: See Shipbuilding

Supersonic: See Aircraft

Suppliers:
NAPA: Evaluation of supplier performance (book), 4/8, p.68

Surface Treatment:
See Metal Cleaning, Finishing

Surplus Equipment:
See Defense Supply Agency

Sweden:
Automakers exports, 4/1, p.98
Steel consumption per capita, 3/11, p.97
Union attacks right to fire, 3/25, p.177
Vacations up to four weeks, 6/24, p.120
See also Ships, Shipbuilding

Systems Engineering:
See Management Systems

T

Taconite Plant:
Ford's Minnesota plant hinges on tax action, 3/4, p.30

Tantalum:
Tantalum, once spurned, now on aerospace list (space vehicles), 2/11, p.90

Tape Control: See Numerical Controls

Taxes:
Administration's proposals (Kennedy's State of Union address), 1/21, p.26
Administration's tax research incentive proposals, 2/4, p.21; no major opposition, 3/25, p.27
Brady (Foreign Trade Council): Marketing, packaging do add value (tax hearings), 4/1, p.60
Consumption tax proposed by steelmaker, 2/4, p.17
Dillon: Highlights of testimony (small firms may get tax break), 2/11, p.28
State and local governments may up taxes, 6/17, p.18
Tax credit plan tied to foreign aid, 4/22, p.149

Technology:
Aerospace Research Applications Center, Indiana Univ., new plan aims to speed space knowhow, 1/21, p.28
Analysts told: Man on moon would stimulate business (developments), 4/29, p.27
Big new markets of the sixties, 2/4, p.30
Designers push materials, ask for more, 5/13, p.63
GE (Dr. Suits): Competition catalyzes use of new technology, 2/4, p.86
Men and machines will part in tomorrow's plant, 2/4, p.42
Shortcut to product diversification (DLT plan), 2/25, p.30
Idea swap 'essential' for world trade: Grob (Renault) and Nagano (Fuji Iron), 2/25, p.104
World technology: How are we faring in battle to keep pace? How European research differs from ours and why? 4/8, p.22

Telephones:
Dial-o-verter for missile date, 1000 words per minute over telephone, 2/25, p.63
Electronic switching system operates in microseconds, 2/11, p.118
Interplanetary galactic telephone, 4/29, p.20
Undersea telephone parts, forged beryllium copper cylinders, 1/28, p.56

Television: See Radio, TV

Temperatures:
Flame temperature measured by

beta rays in Ontario steel plant, 2/18, p.62
Refractory makers find new ways to manage heat, 1/14, p.35
Ten steps listed for temperature specs (thermoelectronics), 2/25, p.59

Texas:
Steel importers win Buy American battle in Texas, court decision, 2/4, p.18

Thermoelectrics:
Compact thermoelectrics produced by evaporation process, 3/4, p.71
Cutting tools cooled thermoelectrically, 5/13, p.80
Teaching device for principles of thermoelectrics, 2/25, p.19
Ten steps listed for temperature specs (Sonnenschein, Carter Products), 2/25, p.59

Tin:
Molten tin, liquid vs solids, TO, 6/10, p.20

Tin Plate:
Australian production (Broken Hill Ltd.), 2/18, p.75
Bethlehem thin tin mill, description, 3/18, p.33
J&L expansions for thin tin market, Aliquippa (Stephen's report), 1/21, p.52
Soft drink promotion market readied by producers (firms), 2/18, p.33
Steel firms add facilities (TC&I, Inland), 1/7, p.33
Stockpiled tin plate payment may be delayed, 3/11, p.85
TC&I thin tin plate mill, Fairfield, Ala., 1/14, p.27
Vertical strip movement while reading coating thickness simplifies gage unit, 4/29, p.52

Titanium:
1963 shipments forecast, 1962 report, 1/21, p.27
Purge chambers for inert gas welding of titanium, 2/18, p.59
Titanium for supersubmarines? Navy research, 6/17, p. 79

Tooling System: See Machining

Tool & Diemakers
Apprenticeship programs inadequate, skilled shortages, 3/25, p.83

Tool Show Features:
Highlights of conference (products), 4/22, p.137

Tool Steel:
Guide to tooling materials, 4/22, p.97
Machinable carbide (Ferro-Tic C), 5/27, p.96
Machinable carbide die (Ferro-Tic C), cuts costs, 6/47, p.31
Rubber draw die doesn't scratch, 2/11, p.93
Tool life increased by process that relieves residual brittleness in alloy steels (stress relief), 2/11, p.101
Vacuum melted die steel, 2/11, p.101

Tools (Cutting):
Carbide inserts, shape key to savings, 6/24, p.81
Carbide inserts-throwaway, cost cutters, 2/18, p. 58
Kronenberg (consultant) progress report, TO, 5/13, p.20
Thermoelectrically cooled cutting tools, 5/13, p.80

Toys:
Industry report, 3/25, p.18

Trade Association:
Copper Development Assn. formed, 1/14, p.26

Trade Missions:
U. S. Chamber of Commerce mission views Japan as good machine tool market, 1/14, p.25
Commerce Dept.'s program in action, 4/29, p.26

Training:
California retraining programs, 4/15, p.92
Engstrom (RCA): Challenge of retraining labor force, 4/8, p.19
Manpower retraining programs in California, 4/15, p.92
Stanford Univ. retraining, machines plus teacher, 5/6, p.93
Tool distributor salesmen get C.O.S.T. marketing talks, 4/8, p.60
Vocational education needed, 3/25, p.180

Transistors:
Device called metal oxide semiconductor transistor, 2/18, p.20

Transportation:
Automatic Skybus rapid transit experimental run (Westinghouse's), 6/17, p.19
Commuter Service, N. Y. waterways, with hydrofoil boats 4/15, p.19
Proposed rapid transit, StaRRcar, 5/20, p.19
Supersonic commercial transport, timetable, 1/28, p.18

Tubing: See Pipe, Tubing

Tungsten Ore:
Scheelite concentrate from Canadian mine, 1/21, p.57

Turbine Industry:
Awaits ruling on foreign bids, 3/11, p.28
Hitachi (Tokyo) protests turbine contract favoring Allis-Chalmers, 5/13, p.92
Mitsubishi Heavy Industries, Tokyo, low bidder, 6/3, p.18

Turnings:
Tangled metal turnings converted to chips, 3/11, p.64

U

Ultrasonics:
Aid to atomization (oil burner small enough for dorestic water heater), 1/28, p.20
Auto makers send high speed steel tools out for ultrasonic treatment, 5/13, p.20
Bell Lab: Twisting a wave of ultrasonic energy with magnetics, 1/21, p.20
Booming world of silent sound (new market), 5/6, p.63
Borg-Warner ultrasonic cleaner for auto valve bodies, 2/4, p.40
Descaling removes forging scale with ultrasonics, 4/29, p.54
Point type transducer for ultrasonic testing devices, 1/14, p.20
Pressure test transistorized unit, leaks in pipe fittings, etc., 6/24, p.84
Submarine cleaned ultrasonically undersea, 4/8, p.20
Ultrasonic fatigue detector, 3/25, p.20
Ultrasonic gaging (pulse echo tech.), pressure vessels and pipelines, 4/22, p.137
Ultrasonic thermometer pinpoints ocean temperatures, 4/15, p.18
Ultrasound assists grinding, 4/15, p.31
Ultrasonic vibrations help grinding, (article) 5/20, p.56
Ultrasound vibrations boost electroforming quality, 6/3, p.67

Underwater:
Japanese firm plans for undersea vacation resort, 1/21, p.15
Underwater tank of future (new defense markets), 5/27, p.74

University of California:
Mason Haire (researcher) proposes cafeteria style wage plan (workers chose earnings-benefit split), 3/11, p.31
Livernash (Harvard) addresses management conference on collective bargaining, 4/8, p.24

University of Michigan:
Lab to study worldwide industrial systems, 5/6, p.83
Climax Molybdenum lab on campus, 5/6, p.89
Dr. Likert: Flaws in communication stifle good ideas, 1/14, p.86
Metal failure research (signalled by noise), 5/20, p.31

University of Southern California:
Dockson urges private business to R&D spending, 2/4, p.86

Used Machinery:
Markets report (MDNA meeting), 5/27, p.27

V

Vacuum:
25 vacuum furnaces, who's to buy? Steelmakers who have installed furnaces, 2/4, p.25
Hot vacuum forming (sheet metal parts), 4/1, p.20
Metal structures studied hot in miniature vacuum furnace, 4/1, p.52
U. S. ingot mold degassing process licensed in Germany, 4/29, p.54
Vacuum evaporator coating tech., 1/14, p.26
Vacuum furnaces insulated by felt form of materials, bypass graphite and carbon powders, 5/6, p.76
Vacuum induction melting furnace, Special Metals, 3/18, p.31
Vacuum remelt furnaces (Cameron Iron Wks.) for superpurity aerospace alloys, 6/10, p. 109

Value Analysis:
A vendor looks at value analysis: Chart—roadblocks to good value engineering, 1/7, p.143
Booklet (and article): Relationship between production cost and tolerances and finishes, 2/18, p.56
Put VA into new product introductions, 1/7, p.159
The case for design beyond engineering (Knapp Associate) 5/13, p.70
Martin Co.'s program, Orlando, Fla., involves all employees, 5/27, p.91

Valves:
Air valve dev. (33 components do work of 1460 valves), 5/13, p.80
Automated brazing machines, water valve firms, 2/25, p.49
Welding pipes to pipeline valves in shop instead of in field, 3/4, p.72

Vibrations:
Ultrasonic vibrations help grinding, 5/20, p.56
Unit ends chatter and vibration in machine boring, 5/13, p.73

W

Wage-Price Guidelines:
President sets up wage-price guidelines to check inflation, 1/28, p.26

Wages:
Australia, for skilled workers, 2/18, p.100
Cafeteria style wage plan (workers decide earnings and benefits), 3/11, p.31
Is productivity rise offsetting wage hikes: Eddy-Rucker-Nickels (table), 4/1, p.22
European Common Market, differences in wage costs, 4/1, p.97
German wages vs U. S., 3/18, p.177
Kaiser plan, average of 10c an hour raise, 3/11, p.31
Japan seeks wage equal to Europe, 3/18, p.178
Machine tool ruling, Walsh-Healey, 5/27, p.17
Personal income (wages-salaries), 3/25, p.17

Warehouses:
Alloy Steels: New milling saw cuts costs, delivery time, 4/1, p.48
Automatic warehousing for food processor controlled by digital computer, 4/8, p.20
Colgate - Palmolive: Warehouse handles order a minute, Jeffersonville, Ind., plant, 3/25, p.72
Sara Lee, automated operation (systems concept), 6/17, p.28

Warehousing, Distribution:
Service centers modernizing to ease profits squeeze, 2/11, p.94
Steel Service Centers: Earnings, industry reports, 1/21, p.25 and 6/3, p.27

Wastes:
Electrochemical machining waste fluids converted to fertilizers, 1/28, p.20 and 2/4, p.20
Platers cut cyanide costs by evaporation recovery system, 2/11, p.119

Water:
Mexico: Distillation (fresh water) plant, 3/18, p.19
Salt water conversion tech. called thin film vapor compression (Westinghouse), 2/18, p.18
Salt water conversion practical (Carr, Undersecretary of Interior), 3/4, p.67

Weighing: See Scales

Welding Equipment:
Automatic precision welding equipment aids space builders, 3/4, p.31
Lincoln Innershield used to revivify N. Y. elevated tracks, 5/13, p.89
Manipulator for 35 ft welds (pressure tanks), 1/28, p.49
Page-Hersey buys huge resistance welding unit to produce wall pipe, 3/4, p.31
Plasma cutting lauded by Czechs, 6/17, p.82

Welding Show:
Features equipment, processes, 4/15, p.62 and 4/29, p.25

Welding (Arc):
Aluminum welded to other metals (gas metal-arc spotweld), 4/15, p.82
Arc spotwelder speeds missilework, 4/29, p.57
CO_2 pipeline welding, 1/21, p.20
Deere saves with gas-metal arc-welding, 6/24, p.68
Percussive welds for electrical connections, how to get (Coyne-Bell Telephone), 6/3, p.70
Rail welding system (submerged arcweld with heat treat unit), 3/18, p.115
Semiautomatic Squirt (torch) welder for tank shells, 2/25, p.51
Semiautomatic welders using vapor shielded arc process double speed (girders), 4/1, p.43
Welding glass linings of water heaters, 4/15, p.82

Welding (Diffusion):
Cold welding, problem for space industry, 6/17, p.31

Welding (Electron Beam):
Aerospace metals welds without vacuum, 5/6, p. 92
Honeycombs welded via electron beam method, 2/4, p.19
Portable vacuum chamber, boon for electron boom, 4/15, p.86
Used for spacecraft while in flight (study), 2/18, p.20

Welding (Flash):
Flashwelding stainless segment to alloy steel shaft (drive for outboard motor propeller), 5/27, p.86

Welding (Resistance):
Buttwelder 'stretches' blank stock widths, auto tops, 4/22, p.152
Expert evaluates three resistance weld advances (Jack Ogden, Fisher Body), 2/25, p.52
Studwelding flatcar, 2/18, p.59

West Coast Metal Importers Assn.:
Survey shows West Coast importers aren't stockpiling, 4/1, p.64

Western Reserve University:
ASM searching literature computer at Documentation Center, 3/4, p.58

Wire:
Hydrostatic extrusion, wire directly from aluminum billet stock, 3/4, p.65
Oxalate lube coating for stainless wire, 6/17, p.76
Stainless braids protect Titan fuel lines, pic, 3/25, p.35
Superconductive wire, high ductility, 5/6, p.87
Wire coils up to 5000 lb at Bethlehem, 2/25, p.66

Wire Rods: See Steel Dumping

World Fair:
Unisphere, permanent symbol, built by U. S. Steel, 3/18, p.35

World Markets: See Foreign Trade

XYZ

X-Ray:
TV camera tubes used for x-ray studies of metals, 2/11, p.119
TV camera and x-ray inspect welded pipe seams, 5/6, p.33

COMPANY INDEX

A

AA Industries Inc.:
Ultra-RoDex table, IE, 4/29, p.105

Ace-O-Matic Engineering Co.:
Gear motor, governor control, IE, 6/24, p.139

ACF Industries Inc.:
Grit blast cleaners installed at two plants, 2/25, p.71
Welding tank cars, pic., 1/28, p.32

Acme Mfg. Co.:
Traversing billy roll, polisher, IE, 3/25, p.197
Wet scrubbing machine for coil stock, IE, 1/28, p.110

Acme Steel Co.:
Buys English strapping firm, 3/18, p.33
Powered dispenser for steel strapping, IE, 2/28, p.114

Aerojet-General Corp.:
Develops plastic armor (AGC Type II), 4/8, p.26
Moves headquarters, B, 5/13, p.35
Rocket chamber (280 in.-diameter) fabricated, 3/4, p.69

Affiliated Manufacturers Inc.:
Vacuum transfer device moves tiny parts, IE, 1/28, p. 111

Air-Mite Devices Inc.:
Air press for high production, IE, 2/25, p.117

Air Products & Chemicals Inc.:
Builds oxygen plant for Chile firm, 1/28, p.32
Compressor, tenth size, TO, 4/15, p.20
Expansion program includes R&D, 6/10, p.33

Air Reduction Co. Inc.:
Continuous wave laser develops 9 watts of power, 5/13, p.88

Air Reduction Sales Co.:
Automatic welders for space builders, 3/4, p.31
Engine driven welder, IE, 6/24, p.135
Mild steel welding wire eliminates jamming, IE, 5/27, p.144
Welding gun CO_2 for thin gage metals, IE, 2/11, p.186

Airline Welding & Engineering Co.:
Controlled atmosphere welding chamber, IE, 5/20, p.107
Plastic bubble absorbs ultraviolet in welding, IE, 4/15, p.137

AiResearch Mfg.:
Heat exchanger for space unit welded-electron beam, 4/15, p.66

Airvac Corp.:
Vacuum lifting pads, IE, 2/25, p.119

Aitken Products Inc.:
Electrical heater drys ladle linings, 2/28, p.64

Ajax Magnethermic Corp.:
Buys McKay plant, B, 2/4, p.28
Gears induction hardened one tooth at a time, IE, 4/8, p.116
Induction furnace, ingot preheating, conveyorized, 6/24, p.84
Moving headquarters and divisions to Warren, 5/6, p.35

Alabama Gas Corp.:
Gas connections made with plastic coated steel tubing, 3/25, p.80

Alabama Wire Co.:
Merged, B, 6/3, p.35

Alan Wood Steel Co.:
Markets new iron alloy powder (AW941), 4/1, p.26

Alcan Industries Ltd.:
Automatic filler wire improves TIG spotwelding, TO, 2/11, p.20

Alco Products Inc.:
Tape controlled turret machines, 1/7, p.35

Allegheny Ludlum Steel Corp.:
Adds oxygen furnaces, 2/25, p.31
Price reduction on stainless strip, sheet, 3/4, p.77
Seamless pipe prices cut, 3/25, p.33
Stainless (Checkwate 8) used for standard weights, 4/22, p.140

Allen Mfg. Co.:
External wrenching spline drive for threaded fasteners, IE, 6/24, p.131

Allied Abrasive Co.:
Buys Federal Diamond, B, 3/18, p.35

Allied Automation Systems:
Mechanical template serves as control for robot arm, IE, 4/15, p.134

Allied Research Products Inc.:
Merges with Barrett Chemical, B, 1/28, p.32

Allied Structural Steel Co.:
Semiautomatics welders using vapor shielded arc process double speed (girders), 4/1, p.43

Allis-Chalmers Mfg. Co.:
Aluminum nitride refractory resists erosion, corrosion, IE, 1/7, p.322
Computer scheduled for pump testing, 5/6, p.33
Defense contract for hydraulic turbines, 4/29, p.19
Fuel source for military, space power study, 4/1, p.18
Turbine contract award (McNamara decision), 5/13, p.92

Alloy Steels Inc.:
Special milling saw cuts costs, delivery time, 4/1, p.48

Alloyed Electronics Corp.:
Aerospace metals, electron beam welds without vacuum, 5/6, p.92

All-State Welding Alloys Co.:
Welding products exhibited, IE, 4/15, p.134

Alpha-Molykote Corp.:
Teflon powder lubricant, IE, 4/22, p.225

Alroll Inc.:
Dedicates Oswego plant, 6/24, p.18

Aluminium Ltd.:
Acquires U. S. fabricating plants, 2/18, p.33
Buys interest in Italian rolling mill, 1/28, p.32
Rolling mill, Kingston Wks., 6/17, p.35

Aluminum Co. of America:
Alloys new—aluminum casting (354-359) and aluminum structural (6070-6061, 5/27, p.98
Aluminum anodes (alloy CB 75) resist sea corrosion, IE, 1/7, p.324
Aluminum smelter in Norway (negotiating), 3/18, p.35
Awards contracts, cold strip rolling mills, Ind., B, 6/24, p.33
Rocketmaking process proposed, 2/11, p. 31

Aluminum Extrusions Inc.:
Customer service dept. new, 3/11, p.65

Amchem Products Inc.:
Chromate coating for prepaint use attractive to coil coaters, 6/10, p.113

Amerex International Inc.:
Handles international business for: 5/13, p.35

American Brake Shoe Co.:
Buys S. K. Wellman, B, 4/29, p.30
Denison Eng.—double vane pumps, IE, 5/13, p.165
Denison presses designed for transfer lines, IE, 6/3, p.112
Joint ownership in Denison Hydraulics Japan Ltd., 5/27, p.33

American Broadcasting Co.:
Hagerty urges managers become TV 'performers,' 2/4, p86

American Can Co.:
Sund: Personnel executives measured in company profitability, 2/18, p.26

American Dockbridge Inc.:
Loading ramp, simplified design, IE, 6/24, p.134

American Machine & Foundry Co.:
Application for rail welding system, 3/18, p.114
Auto smog burner, 5/6, p.89
Buying Western Tool & Stamping, 6/10, p.35
Friction welder smaller and improved, IE, 5/13, p.156
Gott: AMF . . . search for things to automate, 2/4, p.35
Mechanical hand for automation, 1/21, p.20
Versatile transfer machine for short runs, 5/6, p.17

American Metal Climax Inc.:
Buys Hunter Eng., B, 4/29, p.29
Buys Schokbeton, B, 3/25, p.35
Capital expenditures for '63, 1/28, p. 31

American Motors Corp.:
Abernethy warns of horsepower race, 1/28, p.88
Cushman: Cites public reaction to bargaining breakdowns, 1/28, p.17
E-stick transmission, 3/11, p.89
Kenosha expansion planned, 3/25, p.33
Kenosha installation, third, 6 cylinder line, 5/6, p.122

American Precision Industries Inc.:
Buys Electromechanical Div. of Carmody, B, 6/3, p.35

American Sealants Co.:
Primer accelerates sealant curing time, IE, 4/8, p.118

American Telephone & Telegraph Co.:
Center for communications review, 3/25, p.83

American Twist Drill Co.:
Steel taps and reamers, IE, 4/29, p.102

Amertool Services Inc.:
To establish Japanese subsidiary (technical assistance), 2/25, p.54

Amsler Morton Corp.:
Soaking pits for Atlantic Steel, 3/11, p.60

Amsted Industries Inc.:
Pressure pouring process patented, 6/17, p.17

Anaconda Co.:
Aluminum from clay, extracting process successful, 5/27, p.29
Chile copper negotiations concluded, 5/27, p.110
Chilean expansion plans, 6/24, p.33

Anaconda American Brass Co.:
Measuring gases in copper alloys, cover, 2/25, p.42
Research program, planning route to profits, 2/25, p.43

Anocut Engineering Co.:
Electrolytic machining line debuts, 2/11, p.17
Electrolytic lathe machines forgings, 3/25, p.33

Arkota Steel Co.:
Debut delayed by technical-financial problems (Madaras process), 2/11, p.29

Armco Steel Corp.:
Benefits in use of pelletized ore in blast furnaces, 1/21, p.44
Continuous casting unit at Sand Springs Wks., 4/1, p.17
Expands Washington Court House plant, 5/27, p.31
Johnston: 19th century thinking—business, government, 4/8, p.17
National Supply headquarters moved to Houston, B, 6/3, p.35
Oriented electrical steel (M-4), 4/22, p.140
Sheffield eliminates differentials on wire, 4/22, p.174
Slab-plate mill, Houston, computer control, 6/10, p.33
Slab-plate mill eases pressure, 6/24, p.74
Spain: Tubing plant in Barcelona, 4/1, p.28

Armstrong-Blum Mfg. Co.:
Bandsaw, hacksaw improvements, IE, 4/22, p.221

Armstrong International Co., A. J.:
Credit cards for foreigners, 4/29, p.87

Arnold Engineering Co.:
A small, superconducting magnet dev., 5/20, p.70

Arvin Industries Inc.:
Exhaust system with small muffler, 3/11, p.90

Arwood Corp.:
Sweeny: Design guide rules for tolerances of investment castings, 1/21, p.40

Astro Structures: See Lear Siegler

Atlantic Steel Co.:
Blooming mill and new soaking pits level steel capacity, 3/11, p.60

Atlas Press Co.:
Lathe design, Clausing Div., IE, 5/27, p.153

Atlas Steels Co.:
Slab casting plant, Que., 6/3, p.72

Atlas Steels Ltd.:
Sold, B, 3/4, p.33

Aurora Corp. of Illinois:
Buys Gabriel Valve, B, 5/20, p.35

Austin Co.:
Contracts for Turkish structural mill, 2/11, p.33
New facility features automatic tools, 3/11, p.69

Automatic Welding Co.:
Portable wire feeder for hard surfacing, IE, 1/28, p.110

Automation Devices:
Unit delivers parts to remote machines, IE, 1/7, p.316

Automation Industries Inc.:
X-ray unit light, high power, Sperry Products, IE, 2/4, p.103

Autonetics: See North American Aviation

Avco Corp.:
Plasma spray coater, water cooled, IE, 5/20, p.118

Avery & Saul Co.:
High tolerances on bench plates, angles, IE, 3/11, p.117

Avery Label Co.:
Self-adhesive labels make PERT faster, IE, 5/6, p.150

B

B & C Metal Stamping Co.:
Automatic electrostatic painting setup, 2/4, p.41

B-I-F Industries:
See New York Air Brake

Babcock & Wilcox Co.:
Coal injection system moves fuel by air, 3/4, p.60
Converter hood life extended by water cooling, 6/10, p.120

Hydraulic shear trims hot slabs, Koppel, Pa., plant, 6/24, p.76
Puerto Rican contract (generating unit), 4/8, p.27
Technical assistance to Spanish mill, 3/11, p.35

Badall Co. Inc.:
Carbonitrided steel rolls for hot strip mills, IE, 1/28, p.106
Temperature uniform on hollow steel rolls, IE, 6/10, p.180

Baird Machine Co.:
Buying U. S. Tool, B, 2/18, p.35

Baird Corp.:
Name change, B, 5/27, p.33

Baldwin-Lima-Hamilton Corp.:
Builds automated, continuous finishing copper wire rod mill for Canadian plant, B, 2/11, p.35
Buys Green Fuel, B, 2/4, p.28
Corporate changes, German outlet, other moves, 3/25, p.84
Ginn: Trend to metal forming, 5/27, p.17
Steel vessel for AEC, 3/4, p.69

Bannock Steel Corp.:
Buys Gate City Steel, B, 5/20, p.35

Barker Engineering Co.:
Vertical milling head attachment, IE, 6/10, p.192

Barnes Co., W. F. & John:
Unit components, standard sizes, IE, 5/13, p.164

Barnes Drill Co.:
Honer for heavy stock removal, cylinder liners, IE, 5/6, p.147
Index unit automatic, IE, 4/15, p.138
Three-way Barnesdril machines motor frames, IE, 1/28, p.108

Bart Mfg. Corp.:
Buys Kent Corp., B, 6/3, p.35

Basic Industries Inc.:
Hot forming press for exotic metals, IE, 3/11, p.112
Press features close temperature control, 3/4, p.33

Basic Products Corp.:
Buys Davenport Mfg. Div., 4/1, p.28
Buys Lindberg Engineering, 1/7, p.33
Dudley Seay takes firm from malt to metallurgy (cover), 3/4, p.51
Punch cards regulate heat treat process, IE, 3/25, p.198

Batten, Barton, Durstine & Osborn Inc.:
Brower: Appraisal of industrial leaders, 1/21, p.82

Battronic Corp.:
Makes battery powered truck, 4/8, p.96

Bausch & Lomb Inc.:
Builds ruling engine to produce scales and grids, 4/22, p.17
Fiber optics inspection tool, IE, 6/24, p.129
Gets ready for optical measuring (precision scales), 5/20, p.60
Optical gage measuring device, IE, 1/28, p.110
Zoom optical system on bench metallographs, IE, 5/27, p.153

Bean & Co., Morris:
Builds second foundry, Cedarville, O., 5/27, p.31

Bear Mfg. Co.:
Balancing machine has correcting drill press, IE, 4/22, p.220

Bell Telephone Laboratories:
Computers fail in library use, Pierce reports, 4/15, p.20
Fasteners, vibration tests, 6/10, p.102
How to get reliable percussive welds (James Coyne), 6/3, p.70
Magnetic field enables twist wave of ultrasonic energy, 1/21, p.20
Pure research too expensive: Morton asserts, 5/13, p.18
Telephone switch system, microsecond, 2/11, p.118
Thermometer-quartz, sensitive, 6/3, p.29

Bellows-Valvair:
Captive foundry-mechanization, cuts reject rate on castings, 2/25, p.50
Switch reactor pin on in-line valves, fail-safe feature, IE, 3/11, p.117

Bemol Inc.:
Lubricant powdered tungsten disulfide, for extreme temps, IE, 6/3, p.110

Bendix Corp.:
Closed circuit TV operates in dark, IE, 2/25, p.114
N/C positioning on turret drills, IE, 6/10, p.184

Bethlehem Steel Co.:
Automated process speeds order entry, 4/8, p.63
Bar mill, 8 in. called 'Pacesetter', new at Johnstown, Pa., plant, 6/3, p.33
Burns Ditch, Ind., plant goes ahead despite Sen. Douglas dispute, 2/25, p.31
Burns Ditch contract to Swindell-Dressler, 4/1, p. 19
Burns Ditch contracts (firms), 5/20, p.33
Dumping charge (Japan), 2/11, p.18, refuted by STEEL, 2/25, p.18
Sparrows Pt.: Carbon bottom 'K' blast furnace, pic., 5/6, p.35
Sparrows Pt.: Scrap baling press, 1/28, p.32
Sparrows Pt.: Thin tin mill, 3/18, p.33
Steel casting—turbine impulse runner, 5/20, p.35
Weikel: Invites research projects, 6/10, p.27
Wire coils, 5000 lbs., 2/25, p.66

Big Joe Mfg. Co.:
Platform lift truck self-propelled, IE, 6/24, p.138

Black & Decker Mfg. Co.:
Buys factory, England, B, 5/27, p.33

Blanchard Machine Co.:
Sludge removal in surface grinder, IE, 5/20, p.117

Blaw-Knox Co.:
Charing machine cuts open hearth load cycle, 2/4, p.44
Merges functions into Buflovak Div., B, 6/10, p.35
Scrap charging machine (Rapicharger), IE, 1/14, p.102

Bliss Co., E. W.:
Buys government facilities, Canton, B, 5/20, p.35
Canmaking equipment has horizontal rotary parting machine, IE, 1/7, p.307
Cold reducing mill-stainless sheet contract for J & L, 4/22, p.31
Cold reduction mill shipped to Philippine Islands, 5/13, p.35
Dynapak purchase from General Dynamics, bid, 1/14, p.22
Dynapak bid withdrawn, 1/28, p.31
Reversing mill for Australia, B, 2/18, p.33
Tin temper mill for Nippon Kokan, 4/8, p.28
Stamping press, high speed (refrigerator fins), 2/25, p.54
To make Lombard drawbenches (tube and bar), 2/25, p.31

Bliss & Laughlin Mfg. Co.:
Buys Belmont Mfg., B, 1/14, p.28

Bliss & Laughlin Inc.:
Robbins blasts gov't's lack of fiscal responsibility, 3/18, p.180

Boeing Co.:
Fuel tank linings oven cured, 4/1, p.28
Polarized light reflecting from plastic coating (rainbows) predict stress patterns, 3/25, p.18
Strike deadline, union shop issue, 1/14, p.23
Wood (Aero-Space Div.): Man on moon would stimulate business, 4/29, p.27

Booz, Allen & Hamilton:
R&D management programs bog down, 3/4, p.51
Stolle: Use PERT for marketing problems, 1/7, p.158

Borden Metal Products Co.:
Buys Blair Tool, B, 4/1, p.28

Borg-Warner Corp.:
Plastic injection moldings size of refrigerators, Marbon Chemicals Div., 5/27, p.94
Ultrasonic cleaner (auto valve bodies), 2/4, p.40

Bostrum Corp.:
Buys Steelex, B, 5/20, p.35

Botfield Refractories Co.:
Graphitic refractory resists thermal shock, IE, 5/6, p.140

Bowles Engineering Corp.:
Plastic logic components formed photographically, 1/21, p.46

Boxton-Beel Inc.:
Reflectors for tracing satellites, 6/10, p.103

Braeburn Alloy: See Continental Copper

Brane Corp.:
Arrow drilling, milling machine, tape control, IE, 2/25, p.113

Branson Instruments Corp.:
Cover: Branson with tools of ultrasonics, 5/6, p.62

Bridgeport Brass Co.:
Cladmetal Div., brazed honeycomb panels for commercial use, 2/25, p.56

British Iron & Steel Corp. Ltd.:
Moves N. Y. offices, B, 5/13, p.35

Broken Hill Pty. Ltd.:
Continuous steelmaking pilot unit, 6/3, p.64

Broun Engineering Co.:
Cold extrusion pays off, 5/20, p.54

Brown & Sharpe Mfg. Co.:
Computer slashes tape preparation time, 4/22, p.137
Lease plan for machine tools with purchase option, 2/4, p.53
Transistorized electronic gages, IE, 2/18, p.115
Turret drilling machine line, IE, 5/6, p.139
Visual aid added to grinder, IE, 1/7, p.306

Brumley-Donaldson Co.:
Statements on Japanese steel dumping, 1/7, p.28

Bryant Chucking Grinder Co.:
Center hole grinder, IE, 4/1, p.113

Buck & Associates, Carl:
Rubber lined pumps move hot acids, IE, 1/7, p.316

Buck Tool Co.:
Mandrel excels in holding precision, IE, 4/22, p.224

Budd Co.:
Automotive Div., $15 million investment, 3/11, p.31
NC on drilling truck wheel hubs, 4/1, p.20

Buhr Machine Tool Co.:
Handling setup for drilling diesel engine cylinder block, IE, 6/3, p.110
One machine for four parts (dial machine), 2/18, p.59

Bunell Machine & Tool Co.:
Fixtures handle huge weldments, IE, 1/28, p.114
Sold, B, 6/3, p.35

Burgmaster Corp.:
Bed type turret drill tape controlled, IE, 1/14, p.93
Eight spindle unit drills, bores, taps, IE, 6/10, p.190
Turret drill, 12 spindles, IE, 5/20, p.107
Twist drill tape controlled, IE, 5/6, p.140

Burndy Corp.:
Forms Burndy-Japan Ltd., B, 5/13 p.35

Bushman Material Handling Mfg.:
Grab positions big machined parts, IE, 1/28, p.111

C

CBS Laboratories:
Automated electron beam to make microcircuits, 4/8, p.73

Cabot Corp.:
Garnet material used for tumbling media, 2/25, p.20

California Spring Co. Inc.:
Tiny spring for electronic computers, TO, 5/6, p.20

Calumet & Hecla Inc.:
Wolverine Tube adds vacuum tube furnace, 1/14, p.28

Cambridge Wire Cloth Co.:
Light load processing belt, IE, 3/18, p.194
Metal mesh strapping, IE, 6/3, p.117
Nickel metalmesh belting, IE, 6/17, p.134
Self-releasing sling cuts rigging time, IE, 4/1, p.115

Camcar Screw & Mfg. Co.:
Carlson (cover), cold forming process, 5/20, p.49
Raycarl process, cold forming-extruding fasteners, 5/27, p.83

Cameron Iron Works Inc.:
Vacuum arc remelt furnaces (superpurity alloys for aerospace), 6/10, p.109

Canadian Acme Screw & Gear Ltd.:
Hydraulic drives for power transmission, TO, 5/20, p.20

Capital Products Corp.:
Read Standard: Control accuracy on welding positioners, IE, 6/3, p.114

Carbide Metals Co.:
Adjusts prices on some chromium alloys, 2/4, p.57

Carborundum Co.:
Blows steam against molten ceramic to make refractory fibers (cover), 1/14, p.34
Buys assets of Pangborn, 3/25, p.35

Careers Inc.:
Engineers rate industry over government career, 4/15, p.18

Carlton Machine Tool Co.:
NC machine bores, drills, taps, mills, IE, 1/21, p.87 and 4/8, p.115

Carpenter Steel Co.:
Alloy for nuclear service, Pyromet 600, 6/10, p.145
Stainless wire formed with Oxalate lube coating, (Flexcote), 6/17, p.76
Tests corrosion rates of resistant alloys in heat transfer equipment, 4/8, p.64

Carter Products Inc.:
Thermoelectronics, temperature problems, 2/25, p.59

Caterpillar Tractor Co.:
Sales record, 45% overseas, 4/22, p.207
Tooling system (Insta-Set) solves short run problems, 6/24, p.72

Castle & Co., A. M.:
Installs rotary surface grinder, B, 5/20, p.33

Cayuga Machine & Fabricating Co. Inc.:
Photoelectric guidance system, IE, 3/8, p.200
Welding positioner, manipulator exhibited, IE, 4/15, p.134
Welding head manipulator, IE, 6/17, p.133

Central Foundry Co.:
Pipe and fittings guaranteed for 100 years, 4/29, p.19

Central Metal Products Co.:
Machinable carbide, 5/27, p.96

Centre Circuits Inc.:
Spray etcher, IE, 5/13, p.160

Ceramics for Industry:
Ceramic-metal bond, 3/18, p.111

Cessna Aircraft Co.:
Double production by changing grade of carbide tooling, 2/11, p.120

Champion Spark Plug Co.:
Buys Magnaflux, B, 6/24, p.35

Chance Vought Corp.:
Deep drawing of refractory metals, experiment, TO, 6/24, p.20

Chatillon & Sons, John:
Merges United Aero Products, B, 1/28, p.32

Chemetron Corp.:
National Cylinder expands facilities, 1/14, p.28
NCG Mig welding gun, nozzle water cooled, IE, 3/11, p.115

Chicago Bridge & Iron Co.:
Giant steel trifurcation for project, 2/18, p.35

Chicago Mold Engineering Co. Inc.:
C.O.S.T. marketing campaign of Scully-Jones, 4/8, p.60

Chicago Rivet & Machine Co.:
Automatic riveter, IE, 3/18, p.196

Chromalloy Corp.:
Carbide forms easily, wears hard, 1/28, p.48
Steel bonded carbide, IE, 4/22, p.220

Chrysler Corp.:
Adhesive for brakelinings, TO, 3/18, p.20
Administrative reorganization; Chrysler makes comeback, new developments, 2/4, p.75
Answers R&D critics, 6/24, p.111
Buys controlling interest in Simca, 2/4, p.75
Capital investments, 4/8, p.96
Dodge Truck's Tomkins: Cargo trailers, bus 'trains', fly and float, 5/20, p.92
Drawing compound "Cycledraw," dev. at stamping plant, 6/10, p.31
Moon car-power liquid hydrogen, oxygen, 1/21, p.18
New Yorker Salon luxury car, pic., 2/4, p.76
Overseas program, 4/22, p.17
Pension changes faced in labor pact, 6/10, p.161
Townsend: Urges positive business leadership, 5/13, p.18
Trenton engine plant—'practical' machining pays off, 3/25, p.169
Turbine engine announced, 5/6, p.121
Turbine tests, 5/13, p.138
Turbine engine (pic), consumers to help decide future, 5/20, p.29

Cincinnati Lathe & Tool Co.:
Cintimatic No. 3, multifunction machine on modest budget range, IE, 5/13, p.156
Horizontal mill challenges foreign, used machinery sales, IE, 2/25, p.116
Low cost horizontal milling machine (builder Whitney), 2/13, p.28

Cincinnati Milling Machine Co.:
AF contract to study 'chatter' in machines, 4/8, p.27
ASTME Show, three machines displayed—Hydroform, Electrojet, hydrospin lathe, 4/1, p.109
Climb milling, TO, 5/20, p.20
Grinder has several functions, IE, 4/29, p.102
Hot machining process, 6/17, p.28
Hydroform machine for Ford, 2/11, p.92
NC unit 'Acramatic Hundred,' 4/8, p.121
Open side machine mills big parts, IE, 4/8, p.116
Uses of tooling materials (cover), 4/22, p.97

Cincinnati Milling & Grinding Machines Inc.:
Shear spinning operations, 1/21, p.34

Cincinnati Sub-Zero Products Inc.:
Unit treats materials at low temps., IE, 4/22, p.224

Clair Mfg. Co.:
Finishing machine versatile, IE, 2/25, p.113

Clark Controller Co.:
Static controls, IE, 1/21, p.93

Clark Equipment Co.:
Load Glide Air-In-Floor, compressed air pallet for loading van, 3/25, p.81
Stick control on Omni-Drive vehicle, 1/28, p.88

Clark Mfg. Co.:
Buys Reliance Gauge, B, 4/8, p.28

Cleveland-Cliffs Iron Co.:
Pellets self-fluxing, Marquette mine, 3/4, p.62

Cleveland Instrument Co.:
Gaging system-typewriter readout, IE, 1/28, p.108

Cleveland Metal Abrasive Co.:
Buys Harrison Abrasive Div., B, 3/18, p.35

Climax Molybdenum Co.:
Builds research lab at U. of Mich., 5/6, p.89

Clinton Engines Corp.:
Modernization program, B, 3/11, p.35

Clow & Sons Inc., James:
Contracts for Venezuelan waterworks, 1/21, p.30

Coilfeed Systems Inc.:
Seven station coil processing line (England), knocked down for shipment, 4/29, p.30

Colonial Pipeline Co.:
Laterial pipeline contract, 1/21, p.57
Consolidates Pacific Coast facilities, B, 6/10, p.35
Eastern operations concentrated at Roebling plants, closes Wickwire Spencer plant, Buffalo, 6/17, p.33
Eastern sales consolidated at Trenton, 5/6, p.35
Eddy current detects flaws in pipe coupling, 6/3, p.68
Parallel wide flange beams rolled at Pueblo, 2/4, p.28

Columbia Marking Tools:
Bar stock marking tool, IE, 4/1, p.117

Columbus Bolt & Forging Co.:
Sold, B, 1/21, p.29

Colvilles Ltd.:
Gaugemeter on hot strip mill, 3/11, p.62

Combustion Engineering Inc.:
Buys Refractory & Insulation, 6/24, p.35

Commercial Filters Corp.:
Coolant Clarifier, 6/10, p.117

Concast Inc.:
Agreement discussed with Sendzimir to offer equipment combinations, 1/14, p.27
Continuous casting unit, horizontal rather than vertical, 6/3, p.27
Breakthrough in continuous casting (horizontal machine instead of vertical), 6/17, p.71
National Steel, lone-third stockholder, 5/20, p.33

Congress Tool & Die Div.:
See Tann Corp.

Consolidated Aluminum Corp.:
Aluminum reduction plant, Tenn., 2/18, p.33

Consolidated Edison Co.:
Pipeweld for cable insulation, 5/13, p.82

Consolidated Electrodynamics Corp.:
Quality problems result early in manufacturing process, 6/17, p.20

Continental Copper & Steel Industries Inc.:
Braeburn Alloy expands, B, 1/28, p.32

Continental Machines Inc.:
Hydraulic power units ready for reservoir, IE, 1/4, p.95

Continental Screw Co.:
Stud rolls threads (Holtite Taptite), IE, 4/8, p.116

Contract Mfg. of Texas Inc.:
Formed, B, 5/27, p.33

Cooper Weymouth Inc.:
Coil stock reel (largest), IE, 2/11, p.187
Stock reels with coil support arms-hydraulic, IE, 1/7, p.304

Copeland Refrigeration Corp.:
Heald Bore-Matics means process flexibility, 2/4, p.41

Copperweld Steel Co.:
Expands facilities, Ohio Seamless Tube, 3/25, p.35

Corbin-Farnsworth Inc.:
Precision control on microwelder, IE, 5/27, p.148

Cousino Metal Products Co.:
Gold forming process, 5/20, p.52

Covel Mfg. Co.:
Handfeed grinder, power assist, IE, 5/27, p.150

Creative Products Inc.:
Precision optical detector, IE, 3/4, p.120

Crescent Niagara Corp.:
Buys tool div. of Barcalo, B, 3/18, p.35

Crest Ultrasonic Corp.:
Multifrequency concept on ultrasonic cleaner makes cleaning uniform, IE, 3/18, p.199

Cross Co.:
Electric indexing mechanism, IE, 6/3, p.119
Transfer line processes V-4 cylinder blocks, IE, 1/28, p.113
Working fixture on dial machine, IE, 6/3, p.110

Crucible Steel Co. of America:
Price increase on tool steels turned down, 5/6, p.19

Curry Air Shear Corp.:
Portable air operated shears, IE, 6/24, p.136

Curtis Mfg. Co.:
Buys Bunell Machine & Tool, B, 6/3, p.35

Cutler-Hammer Inc.:
Numerical control positioning system on press, 3/4, p.57

D

Dahlstrom Machine Works Inc.:
Coil peeler, IE, 6/3, p.116
Runout, measuring table doesn't scratch, IE, 2/18, p.111

Damascus Tube Co.:
Cold formed (Flow-Rol) precision tubing in steel and nonferrous metals, 1/21, p.42

Deere & Co.:
Savings with gas-metal arcwelding, 6/24, p.68

De Havilland Aircraft of Canada Ltd.:
Stainless tubes coiled flat for storage, 4/1, p.52

De Laval Turbine Inc.:
Low capacity pump for general purpose, IE, 5/20, p.114

Delta Sonics Inc.:
Ultrasonic vapor degreaser, IE, 6/10, p.180

Del-Vac Engineering:
Vacuum system works on testing, production, IE, 4/22, p.227

Demag A. G.:
Builds rotor furnace for South African plant, 4/15, p.74

Denison Engineering:
See American Brake Shoe Co.

Dennison Mfg. Co.:
Dial-Set tag marking unit, 1/28, p.49

Denver Equipment Co.:
Improvements added to crushing rolls, IE, 1/7, p.312
Rubber lined pump handles 4-26 gpm range, IE, 1/7, p.320

Detroit Broach & Machine Co.:
Broaching tech. pays off, 6/3, p.57
Positioner pares scrap, reworking, IE, 6/17, p.127
Von Reis: Machines not up with science, 4/15, p.124

Detroit Edison Co.:
Electric power generation, computer control, 4/22, p.31

Detroit Hoist & Machine Co.:
Hoist handles lances in open-hearth, IE, 6/24, p.133

Detroit Steel Corp.:
Expanding at Portsmouth, 3/25, p.35

Detroit Tap & Tool Co.:
Universal thread roll attachments, IE, 1/7, p.319

Detroit Testing Laboratory Inc.:
Product diversification aid plan (DTL), 2/25, p.30

DeVilbiss Metal Fabricators Co.:
Power spray washing system, Midwest firm, 4/1, p.43

De Vlieg Machine Co.:
Electronic control for Spiramatic Jigmills, IE, 1/4, p.102
Forms German sales subsidiary, 1/28, p.31
Improvements in Micropoint tool grinder, IE, 4/8, p.121

DeWalt Inc.:
Metal cutting machine, IE, 4/1, p.116

Diamond Machine Co. Inc.:
Cutting fluid multipurpose (sulfurized mineral lard), 2/4, p.40

Diebold Group Inc.:
At NMTBA meeting: Customer needs should dictate your business, 5/6, p.29

Diehl Mfg. Co.:
Buys Air Marine and Motordyne, B, 1/14, p.28

Digitronics Corp.:
Dial-o-verter, data over telephone, 2/25, p.63

Ditto Inc.:
Design boosts sales, 5/13, p.71

Diversified Wire & Steel Corp.:
Buys Thermo Air Products, B, 6/10, p.35

Dixon Corp.:
Thermoplastic resins blended with Teflon, (Meldin A), 4/8, p.117

Dixon Automatic Tool Inc.:
Modular control system applied to transfer machine, IE, 3/18, p.194
Standard components for machine construction, IE, 5/13, p.160

DoAll Co.:
Band machine for contour sawing large workpieces, IE, 3/11, p.115
Bandsaw blade diamond edged, IE, 3/18, p.198
Five scales on gaging equipment, IE, 3/25, p.194

Dodge Mfg. Corp.:
Flexible coupling is spacer for pumps, IE, 5/13, p.159
Friction clutches for low hp, IE, 5/20, p.114

Dodge National Corp.:
Formed with mergers, B, 6/3, p.35

Doehler-Jarvis: See National Lead

Dollar Electric Co.:
Resistance welding gun-transformer, IE, 2/25, p.118

Dorr-Oliver Inc.:
FluoSolids drying system for sand recovery plants, IE, 6/17, p.128

Douglas Aircraft Co.:
DC-9 launched (civilian jet), 4/5, p.29
DC-9 market estimate through 1957, 5/6, p.92
DC-9 financing, subcontractors join in plan, 5/20, p.31
Spacecraft simulation unit tested, 2/11, p.18
Tape controlled machine makes 5 parts at one time, 3/18, p.33

Douglas & Lomason Co.:
Buys Superior Atlanta, B, 1/14, p.28

Dow Chemical Co.:
Cold cleaning solvent, how toxicity, IE, 3/18, p.188
New gas dev. for flame cutting, 4/15, p.79

Drillmation Co, Inc.:
Bore drilling, 5/27, p.94
Tape controlled bore drill, IE, 1/7, p.303

Driver-Harris Co.:
Cobalt foil-magnetic, TO, 4/15, p.20

Droit Mfg. Corp.:
Traveling crane, self-propelled, IE, 5/20, p.108

DuCas Corp.:
Fluid transfer gland, design pares costs, IE, 5/13, p.162

Ducommun Inc.:
Option to acquire Explosive Technology, B, 5/20, p.35

Duff-Norton Co.:
Plans move of executive offices to Charlotte, 2/15, p.32

Duncan Products Inc.:
Glass bead peening-metal parts, 6/10, p.108

Dunlop of Canada:
Develops lightweight rubber (EPT), 2/4, p.53

Dunn Steel Products: See Townsend

Du Pont de Nemours & Co, Inc., E. I.:
Bids for stainless market (auto trim), 3/18, p.25
Nickel sheets marketed, 4/8, p.26
Work on tungsten sheet fabrication, 3/4, p.20

Dynasonic Corp.:
Ultrasonic cleaner-small jobs, IE, 1/7, p.315
Ultrasonic vapor degreaser, IE, 6/3, p.119

Dyna-Therm Chemical Corp.:
Saturn camera coatings protect on blastoff, 4/22, p.20

E

Easco Products Inc.:
Electrical discharge machining, IE, 3/4, p.123

Eastern Rolling Mills Inc.:
Hydrostatic bearing uses high viscosity lubricant, 5/20, p.71

Eastman Kodak Co.:
Dimensions more stable on thick base films, IE, 1/14, p.100

Eaton Mfg. Co.:
Drives, lubrication systems dev., IE, 5/20, p.111
May buy Dole Valve, B, 1/28, p.32
Merger proposal with Yale & Towne, 4/8, p.28

Eco Engineering Co.:
Centrifugal pump electrically heated, IE, 1/7, p.320
Moves into ultrasonics market, 5/6, p.67

Eddy-Rucker-Nickels Co.:
Productivity rise offsetting wage hikes? (table), 4/1, p.22

Edgcomb Steel Co.:
Buys Brookfield Wire, B, 2/18, p.35

Edlund Machinery Co.:
Drilling machine control system, IE, 3/4, p.115
Tool changes fast on N/C unit, IE, 1/7, p.310

Electra Corp. (former Electric Autolite):
Merges with Mergenthaler Linotype, B, 5/20, p.35

Electric Products Co.:
Buys Elliott Crocker-Wheeler, B, 2/4, p.28
Refinements in motor series, IE, 2/11, p.190
Silicon controlled rectifiers, size cutters, IE, 6/17, p.127

Electric Regulator Corp.:
Solid state drives, IE, 3/18, p.194

Electric Storage Battery Co.:
Battery charge increases power, IE, 4/1, p.114

Electromatic Inc.:
Clutch-brake drive, IE, 2/18, p.114
Retaining rings ease assembly of transmissions, 5/13, p.72

Electron Heating Corp.:
Electron beam furnace 6000° F, IE, 1/14, p.99

Electro-Nite Inc.:
Automated control for continuous casting machines, 6/3, p.27

Electro Powerpacs Inc.:
Laser equipped with 5000 volt supply, IE, 5/6, p.150

Elgin National Watch Co.:
Reliability center, TO, 5/27, p.20

Elgin Tool Works Inc.:
Redesigned precision lathe and hand screw machine, IE, 5/13, p.158

Elox Corp. of Michigan:
EDM grinder of intricate carbide shapes, IE, 5/6, p.152
EDM improvements, IE, 6/10, p.190

Elwell-Parker Electric Co.:
Fork lift truck, 8000 lb loads, IE, 6/24, p.135

Engelhard Industries Inc.:
Expands facilities, B, 1/14, p.28

Engineered Equipment Inc.:
Jetliner (gun unit) for truck, IE, 2/11, p.186

Enthone Inc.:
Black oxide coat on iron-steel, IE, 1/7, p.320
Cadmium brightener for barrel plating, IE, 2/11, p.184
Zinc plating solution, IE, 4/8, p.118

Epoxy Products Inc.:
Flexible epoxy solder shields ribbon circuits, IE, 6/24, p.132

Epps Industries:
Expands steel tubing mill, 4/29, p.28

Erie Foundry Co.:
Buys Hammer Div., B, 6/10, p.35
Press capacities, 100-800 tons, IE, 2/25, p.117

Everett Industries Inc.:
Abrasive cutoff unit, IE, 2/4, p.98

Everite Machine Products Co.:
600 ampere unit powers electrolytic grinder, IE, 6/24, p.129
In-the-field conversion to electrolytic tech. for tool and cutter grinders (Everite Kit), 4/29, p.104

Evinrude: See Outboard Marine

Ex-Cell-O Corp.:
Cabinet type power supplies for EDM for Lectra-Form machines, IE, 5/6, p.142
Cylinder boring accuracy, IE, 1/21, p.88
Double setup machine carries identical tooling, 2/11, p.184
Electrical discharge tools, IE, 4/8, p.119
Recirculating linear ball slides, IE, 4/1, p.111
Special finishing machine, IE, 5/27, p.144

Expert Inc.:
Cam controlled unit welds irregular contours, IE, 2/4, p.97

F

Fabricast Mfg. Co.:
Buys Giffrick Dock, B, 6/10, p.35

Fafnir Bearing Co.:
German subsidiary, B, 2/18, p.35
Northern Ireland facilities, 3/18, p.35
Rubber bearing cartridge for conveyor rolls, IE, 2/11, p.185

Falk Corp.:
Packaged drive, range of variable speeds, 4/1, p.110
Schneider to get AGMA's award, 5/13, p.35

Falstrom Co.:
Spotwelding gun, IE, 5/20, p.112

Famco Machine Co.:
Hydraulic press, 3-ton, IE, 1/7, p.319

Fansteel Metallurgical Corp.:
Award winners for NJZ competition, 4/15, p.31
Belgian joint venture, 5/6, p.130 and 1/28, p.32
Combines subsidiaries into Metalworking Products Group (Vascoloy-Ramet, Wesson), 5/6, p.35

Farr Co.:
Portable clean bench, 4/1, p.112

Farrel Corp.:
New name for Farrel-Birmingham, B, 4/22, p.35

Farrel-Birmingham Co. Inc.:
Licensed for German presses, 2/18, p.35

Federal-Mogul-Bower Bearings Inc.:
National Seal uses ultrasonic burglar alarm, 2/4, p.20

Federal-Warco: See McKay Machine

Feedall Inc.:
Feeder automatic (aluminum discs into extrusion press), IE, 6/3, p.119
Feedall model, furnaces, IE, 6/17, p.134

Fenn Mfg. Co.:
Hydraulic feed for long die swaging, IE, 3/18, p.188

Ferguson Machine Co.:
Explosion proof clutch-brake-motor package, IE, 2/4, p.121

Fife Mfg. Co. Inc.:
Center and edge guide unit, IE, 2/4, p.100

Finkl & Sons Co., A.:
Licenses English firm, vacuum degassing in-ladle process, 6/24, p.35
Preset cycle controls forge press, 4/15, p.73

Firestone Steel Products Co.:
Shear spinning makes auto wheel, 1/21, p.33

Fisher Scientific Co.:
Electron probe x-ray microanalyzer, IE, 6/17, p.134

Flick-Reedy Corp.:
Air valve development (33 components do job of 1460 valves), 5/13, p.80

Floating Floors Inc.:
Diecast aluminum floating floor plate, 5/27, p.26

Ford Motor Co.:
Aeronutronics Div. transferred to Philco, 6/24, p.112
Bogart: Cold forming process, 5/20, p.50
Builds bearing plant in Puerto Rico, 3/11, p.31
Car sales (new and used) forecast by Iacocca, 2/18, p.19
Car sales 7 million, three years in a row, predicts Wright, 4/15, p.17
Concept of car marketing (variety of cars), needs new model for Class IV, 2/4, p.76
Corrosion study, antirust materials and coatings, 1/14, p.76
Denise: Collective bargaining will never be easy, 4/1, p.100
Electronic die finisher, 4/15, p.114
Fairlanes roll off assembly line (cover pic), 6/24, p.62
Gas turbine for military use, 3/18, p.117
Hydroforming rear lamp housings from aluminum, 2/11, p.92
Laser beam for studying combustion, 4/29, p.18
Lawson: Technology needs more than college degrees, 3/25, p.180
Monaco showing of 1963 model cars, 1/14, p.75
Mustang development, 2/18, p.92
Quality capability studies for machine tools, and equipment, 5/13, p.137
Shelby Cobra, pic., 6/24, p.112
Spray painting plant ordered from Swedish firm for Lisbon, Portugal, plant, 4/8, p.69
Taconite pellet plant, Minn., hinges on tax action, 3/4, p.30
Turbine engines on the way, 5/6, p.121

Form-All Corp.:
Press brake forms without dies, 6/3, p.57

Formsprag Co.:
Centrifugal clutch line improved, IE, 1/14, p.104
Clutch wear, versatility improved models, IE, 4/29, p.98

Fostoria Corp.:
Chempump models, IE, 1/21, p.92

Fox Grinders Inc.:
Snag grinder for foundry castings, IE, 6/10, p.189

French Enterprises Inc.:
Ballizing process for hole finishing, 4/8, p.59

Fruehauf Trailer Co.:
Aluminum mill, Ala., joint venture, 3/11, p.33

Fry & Associates, George:
Dick: Take a hard look at small account and small order problem, 1/7, p.161

Fuji Iron & Steel Co.:
Hirohata Works unveiled, 6/10, p.169
Nagano: Idea swap essential for world trade, 2/25, p.104
Nagano (president) elected head of Japan Iron & Steel Federation (pic), exclusive interview, 5/20, p.99

Fuller Co.:
Airveyor transfer units carry materials, IE, 2/4, p.97

Fusion Engineering Co.:
Automated brazing for 'nonfreeze' water valves, 2/25, p.49
Paste applicator, faster brazing, soldering, IE, 4/29, p.100

G

Gabriel Co.:
Sells Gabriel Valve, B, 5/20, p.35

Gallmeyer & Livingston:
Series of precision surface grinders, IE, 1/21, p.89

Gar Wood Industries:
Individual hydraulic drive, 3/4, p.20

Gardner-Denver Co.:
Small part packaging simplified, 4/8, p.58

Gardner Machine Co.:
Double disc grinder, IE, 1/21, p.88

Gaynes Engineering Co.:
Incline-impact tester, IE, 1/7, p.311

General American Transportation Corp.:
Manipulator for 35 ft welds, 1/28, p.49

General Cable Corp.:
Ingot preheat melting furnaces conveyorized, 6/24, p.84

General Dynamics Corp.:
Dynapak line may be purchased by Bliss, 1/14, p.22
Dynapak purchase offer withdrawn, 1/28, p.31
Magneform machine, electromagnetic force, IE, 5/13, p.157
Dr. Pidd addresses power conference (converting direct heat to power), 4/8, p.67
Rene 41, heat resistant alloy can be machined, 2/25, p.56

General Dynamics/Astronautics:
Alloys take cold (minus 423° F), TO, 6/3, p.20
Data retrieval system (lists venders), 5/6, p.87

How a supplier is picked, 6/10, p.94
Space train sketched by artist (STEEL cover), 6/10, p.92

General Dynamics/Convair:
Bonding tape (rejected) reclaimed for forming material, 6/24, p.81

General Electric Co.:
Ceramic-Lucalox developed, 2/25, p.19
Ceramic-Lucalox, offers electrical resistance, 3/4, p.56
Clover: Broader maintenance skills needed, 6/17, p.84
Computers sell engineering services, 1/21, p.82
Computer service at Phoenix for small firms and government agencies (Information Processing Business), 3/4, p.69
Cryogenic refrigerator runs four years, 2/18, p.20
Flight propulsion lab controls environment of big machining facility, 4/22, p.18
Fuel cell-hydrocarbon, use potential, 4/29, p.28
Fuel cell operates on natural gas, 1/21, p.28
Gecent postprocessor speeds tape contouring, 1/14, p.40
High pressure electric discharge lamps, TO, 6/10, p.20
Jet engine nozzle area—plastic plus ceramic, 4/15, p.76
Laser units (solid state), 1/28, p.20
Lubricant for working with aluminum, 1/28, p.30
Magnets dev., no recharge, 2/4, p.20
Manufacturing men (Beardslee) report equipment needs at NMTBA, 5/20, p.69
McAleer: How purchasing agents can make standards pay off, 3/11, p.28
McCune: Business incentives need booster, 4/15, p.124
Motor 18% shorter, lighter, 3/25, p.189
Refractory metals plant dedicated in Cleveland, facilities and production, 5/13, p.31
Silicone rubber, easy pouring, IE, 3/18, p.196
Steam generator rotor for TVA, 6/10, p.35
Suits addresses AISI: Behind in metals research, 5/27, p.24
Suits: Competition sparks technology, 2/4, p.86
Superconducting coil-magnetic with field of 100,000 gauss, 6/10, p.17
Synchronous motor uses solid state devices, IE, 2/25, p.121
Vacuum Products Operation formed, 5/13, p.27

General Machine Products Co. Inc.:
Buys Philadelphia Hoist Div., 4/1, p.28

General Motors Corp.:
1962 earnings all-time record, 2/4, p.23
AC Spark Plug: Magnesium die-casting uses, 5/20, p.91
Agency shop agreement with UAW, Indiana plants, 6/24, p.112
Antitrust probe (Mirrors of Motordom), 5/27, p.125
Barr: Looks at future engineering, 4/1, p.89
Chevrolet's new lines for '64, 4/22, p.199
Chevrolet to use more nodular iron, 3/18, p.169
Chevrolet expands Tonawanda plants, 5/20, p.92
Chevrolet wheelbase built in Buick - Olds - Pontiac assembly plants, 6/10, p.18
Corvair (Chevy) revamped, 6/24, p.111
Diecaster (giant) purchased, 4/29, p.29
Fisher Body (Jack Ogden): Expert evaluates three resistance weld advances, 2/25, p.52
Modernizes assembly plants, 2/4, p.23
Noise and vibration lab, 1/7, p.281
Saginaw Gear extrusion process, 5/20, p.51
Sled simulates auto crashes, safety test, 3/25, p.170
To stockpile extra steel, boost capital spending, 2/25, p.26

General Precision Inc.:
Magnetic memory computer for small businessman, 4/1, p.19

General Telephone & Electronics Corp.:
Crystalline converts electricity into red light, 2/18, p.20

Geophysics Corp. of America:
Forms Vactak subsidiary, B, 5/27, p.33
Mass spectrometer for microsurface analysis, IE, 1/21, p.93

Gero Metallurgical Corp.:
Vacuum process licensed in Germany, 4/29, p.54

Giddings & Lewis Machine Tool Co.:
Bendix solid state control on drilling machine, IE, 2/25, p.114
Cassady: 1963 machine tool sales forecast, 4/1, p.18
Continuous feed heads can bore and face, IE, 4/22, p.222
Enlarges to produce numerical controls, 4/29, p.29
Foreign built tools sold here, 3/4, p.29
Horizontal boring, units, improvements, IE, 6/24, p.132
'Instant' delivery, market-anticipation program, 4/8, p.25
Machine heads work independently, IE, 5/6, p.152

Gillette Co.:
Makes stainless razor blades, 5/27, p.109

Gisholt Machine Co.:
ABC lathe, short run work, IE, 5/27, p.143
Automatic threading lathe, IE, 3/11, p.111

Goodrich Co., B. F.:
Ashe: Corporate profit plague weakens consumer spending, 1/21, p.17

Goodyear Aircraft Corp.:
Transportable tracking antenna built for SYNCOM satellite, 2/4, p.53

Goodyear Tire & Rubber Co.:
Jumbo hydraulic press (hot platen type) for precision layup forming, IE, 6/3, p.112

Gordon Co., Claud S.:
Tiny thermocouple, mineral insulated, IE, 2/11, p.184

Gorton Machine Co., George:
Vertical mills, pantograph machine, IE, 3/18, p.187

Goss Gas Inc.:
Exhibits torch, torch handles, regulators, IE, 4/15, p.137

Graham Transmissions Inc.:
Built-in motor part of variable speed drive, IE, 4/1, p.114

Granite City Steel Co.:
Sendzimir roll grinder advantages, 1/28, p.49

Gray Co., G. A.:
Separate tables on machine tools cuts idle time, IE, 3/18, p.199

Green Fire Brick Co., A. P.:
Buys Illinois Clay, B, 3/25, p.35

Greer Stop Nut Co. Inc.:
Sold, B, 6/3, p.35

Gregory Industries Inc.:
Nelson studwelding spatter eliminated by Tranquil-Arc, IE, 3/11, p.111
Nelson Stud Welding exhibits, IE, 4/15, p.135

Gripall Corp.:
Coil lifters, special load mechanism, IE, 5/6, p.149

Grove Valve & Regulator Co.:
Valve welding in shop saves pipeline costs, 3/4, p.72

Gulf Oil Corp.:
Roll oil for bright, clean strip, IE, 3/4, p.119

Gulf States Land & Industries Inc.:
Montana plant (near Anaconda) hits problems, 2/11, p.29

H

Hallicrafters Co.:
Microfilm file, IE, 6/24, p.130

Hamilton Standard: See United Aircraft

Hammond Machinery Builders Inc.:
Electrolytic grinders, IE, 3/11, p.114
Manual platen grinder, wet or dry, IE, 6/10, p.188

Hancock Telecontrol Corp.:
Forms Datametric Div., B, 2/25, p.32
Lawson: Europeans' efficiency due to labor shortages, 1/14, p.86
Monitors and Producto-Corders for work performance, 5/13, p.73

Handy & Harman:
Silver brazing alloy, 2/18, p.58

Handy & Harman Tube Co. Inc.:
Was Posen & Kline, B, 5/27, p.33

Harnischfeger Corp.:
Broaching techniques, 6/3, p.57

Hanson-Van Winkle-Munning Co.:
Cutting fluids converted to fertilizers (Kleiner report), 1/28, p.20

Harbison-Walker Refractories Corp.:
Refractory brick resists abrasion, IE, 1/7, p.306

Harms Co., Perc. H.:
Chromate primer, IE, 2/25, p.114

Harper Electric Furnace Corp.:
Single door box kiln operates to 3092° F, IE, 1/14, p.101

Harper Mfg. Co.:
Sold, B, 6/3, p.35

Harris-Intertype Corp.:
New products, new markets mean profit growth, 2/4, p.37

Harris Mfg. Co.:
Chilling machine, IE, 4/1, p.117

Harsco Corp.:
Buys Cameo Fittings, B, 4/1, p.28

Harvey Aluminum Inc.:
Adds anodizing facility, B, 1/14, p.28
Makes 8 ft impact extrusions, 6/3, p.31

Harvey Hubbell Inc.:
Cold headed beryllium copper parts and fasteners, 6/3, p.73

Hayes Inc., C. I.:
Graphite carbon powders bypassed by felt for insulation, 5/6, p.76
Graphite cloth serves as heating element in vacuum furnace, IE, 3/11, p.113
Vacuum furnace (cold wall type) and air Molecu-Dryer, IE, 3/4, p.117

Heald Machine Co.:
Bore-Matic improvements, IE, 4/8, p.115
Fingers using centrifugal force for grip solves chatter problem in brake drum boring, 4/1, p.43
N/C tool changer, IE, 5/6, p.143

Heco-Pacific Mfg. Inc.:
Dock board unit for unloading flat beds, IE, 1/28, p.108
Dock board unit, IE, 5/20, p.108

Heidrick & Struggles Inc.:
Management training programs, 3/18, p.102
Profile of metalworking presidents (statistical chart), 1/28, p.61

Heifred Corp.:
Drive system key to lift truck advantages, IE, 1/21, p.93

Henes Mfg. Co.:
Water welder, IE, 4/15, p.141; 5/27, p.148

Hevi-Duty Heating Equipment Co.:
Bell oven for nitriding, IE, 1/14, p.101
Cold wall vacuum furnace, IE, 6/24, p.140

Hexcel Products Inc.:
Aluminum honeycomb, Flex-Core, easy to form, 6/24, p.35

Hilfinger Corp.:
Zinc diecast cook stoves for Sears, Roebuck, 1/28, p.58

Hill Acme Co.:
Buys Loma and subsidiary, Lobeck Casting, 4/1, p.28
Machine chamfers couplings, IE, 4/15, p.133

Hobart Bros. Co.:
Portable wire feeder speeds remote work, IE, 3/18, p.199
Welder package, 750 ampere capacity, IE, 5/20, p.108

Hoffman Specialty Mfg. Corp.:
Skinner: Exploring new markets, 2/18, p.15
Skinner: Small firm seeks new markets, products, 3/4, p.50

Hohman Plating & Mfg. Inc.:
Solid film lubricant spray bond, IE, 1/14, p.98

Holden Co., A. F.:
Car bottom furnace, program control, luminous wall, 2/18, p.69

Holley Carburetor Co.:
For purchasing problems, check team buying (Thompson, Carbary, Neill), 4/29, p.48
Forms Italian subsidiary, B, 6/24, p.35

Hondo Motor Co. Ltd.:
Soichiro Hondo: Oriental maverick shows heels to competitors, 1/28, p.50

Honeywell: See Minneapolis-Honeywell

Horton Mfg. Co.:
Air Champ brake, IE, 6/10, p.184

Houghton & Co., E. F.:
Heavy duty cutting fluid, IE, 2/11, p.190
Lubricants for special conditions, IE, 4/1, p.115
Rust preventive spray for metals, IE, 4/8, p.117
Rust Veto Spray goes on wet metals, IE, 1/28, p.113

Howe Sound Co.:
Consolidates three divisions, B, 6/10, p.33

Howell Associates, Ward:
Howell: Manager with specialty most in demand, 4/22, p.27

Hubbell Inc., Harvey:
Cold heading beryllium copper fasteners, 6/24, p.71

Huffman Corp., S. E.:
Tape controlled punch press with X-Y axis positioning, 2/18, p.116

Hufford Corp.:
Now is Astro Structures Div., 1/21, p.33

Hughes Aircraft Co.:
Cost Improvement Program (CIP) for managers (committee pictured), 1/21, p.36
Flock Jr.: Rule for use of computers, 3/11, p.54
Machine performs functions of four, 1/14, p.104

Humanation Associates:
Ruttenberg: Metalworking plants, 2 in 3 gone five years hence, 1/28, p.98
Ruttenberg: Kaiser plan will teach USW productivity facts, 5/27, p.26

Humphreys Corp.:
Induction plasma torch, IE, 1/7, p.322
Torch heats gases, IE, 6/24, p.130

Hunter Engineering Co.:
Aluminum mill, Ala., joint venture, 3/11, p.33
Buys Mecca Machinery, B, 3/4, p.31

Hupp Corp.:
Buys Murray Corp., B, 2/4, p.28
Moves Easy Appliance to Cleveland, B, 5/13, p.35

Hutchinson & Sons Pty. Ltd.:
Norman Hutchinson: Japan cheapest price on high quality steel, 1/21, p.82

Huyck Corp.:
Metal fiber bonded product, 2/11, p.98

Hydraulic Press Mfg. Co.:
Dieing unit combines stamping, forming, IE, 3/11, p.117

Hytrol Conveyor Co. Inc.:
Conveyor made for ceiling, floor mount, IE, 6/17, p.136

I

Ilikon Corp.:
Pulsating heat process for hard steel parts, 3/18, p.31
Sponsors seminar, interrelationships in materials field, 1/28, p.58

Illinois Tool Works Inc.:
Buys interest in German firm, 1/28, p.32

Imperial Chemical Industries Ltd.:
Paint deposited from solution electrically, new process, 5/6, p.74

Imperial Electric Co.:
Brake motors, self-adjusting, IE, 4/1, p.110

Indiana General Corp.:
Magnet handles billets, IE, 5/6, p.149

Indium Corp. of America:
Basic characteristics of indium, 3/11, p.20

Industrial Acoustics Co. Inc.:
Sound test room, convertible, IE, 5/6, p.140

Industrial Management Corp.:
Acquires Moscow Screw, B, 1/21, p.29

Industrial Tectonics Inc.:
Cryogenic tube bearing takes high thrust loads, IE, 3/4, p.118
Self-aligning bearing has integral gear, IE, 1/28, p.111

Industrionics Inc.:
Wintriss devices solve stamping problems, 4/22, p.218
Wintriss overload detector checks damage, waste, IE, 3/4, p.120
Wintriss sonic detector-press ejection, IE, 1/7, p.318

Infrared Industries Inc.:
Optical pyrometer works to 8300° F, IE, 1/7, p.316

Infra Red Systems Inc.:
Quartz tube heater, IE, 1/7, p.310

Inland Steel Co.:
Adds to thin tin plate facilities, 1/7, p.33
Chromate coating for coils, 6/10, p.113
Columbium - vanadium bearing steels, INX 70 introduced, 6/3, p.29
Mine ownership in Africa defended by Randall, 4/22, p.210
Mold foundry, Indiana Harbor Wks., 1/21, p.52
Natural gas endorsed as open hearth fuel, 3/18, p.31
Reduction mill, Mesta contract, 5/20, p.33

Integral Motor Pump Corp.:
Canned pumps handle fluids and slurries at high temp., IE, 2/4, p.105

Interlake Iron Corp.:
Buys Enos Coal Mining, B, 5/20, p.35

International Business Machines Corp.:
Data communications system (manufacturing marketing info), 4/1, p.113
Dr. Tunis, speaker at COINS symposium, 6/24, p.30
Magnetic memory core, computer grain power (cover pic), 3/11, p.48
Microfilm units speed document handling, IE, 5/20, p.111
Tunnel diode unit may speed computer memory, 5/13, p.94

International Harvester Co.:
Orban charters plane to fly German lathe to N. Y., 4/22, p.208
Oxygen contracts for basic oxygen furnaces, Wisconsin Wks., 1/7, p.33

International Metals Corp. Ltd.:
Organized by Detroit men to produce metal products, 3/4, p.31

International Resistance Co.:
Production control tagging system, 1/28, p.49

International Ultrasonics Inc.:
Ultrasonic generator continuously tunable, IE, 3/25, p.190

Ipsen Industries Inc.:
Metal foams process, 5/20, p.65
Roller hearth furnace, refractory metals, IE, 5/6, p.142

Itmann Coal Co.:
Joint venture of National Steel, Consolidation Coal, 2/11, p.35

J

Jarvis Corp.:
Subminiature tapping head (Micro-Tapper), IE, 4/22, p.223

Johannson Co., I. O.:
Head moves on N/C drilling, boring unit, IE, 6/3, p.109

Johansson Gage Co., C. E.:
Automatic gaging machines, IE, 4/22, p.226
Comparator designed for fine measurements, IE, 2/4, p.100
Load cell (CEJ Dynamometer), IE, 3/18, p.202

Jones & Lamson Machine Co.:
30 in. side screen optical comparator, IE, 3/25, p.189
Automatic cycling feature of finishing units, IE, 3/4, p.115
Japanese license, B, 6/17, p.35
Pneumodynamics offer to buy, 1/21, p.29

Jones & Laughlin Steel Corp.:
Basic oxygen furnaces in operation, 6/3, p.72
Contracts for cold reducing mill-rolling stainless sheet, Louisville, Ohio, 4/22, p.31
Contracts for pelletizing plant, Ont., 3/4, p.33
Constructs buildings for Cleveland hot strip mill, 1/21, p.30
Low alloy steel dev., G Lab., 1/21, p.29
Turner: Inadequate manpower limits research, 3/4, p.106

K

KSM Products Inc.:
Controller for arc studweld features metering timer to control current, IE, 4/1, p.116

Kahn & Co. Inc.:
Systems measure wide torque range, IE, 2/4, p.105

Kaighin & Hughes:
To build continuous casting mill for Rebel Steel, 6/10, p.31

Kaiser Aluminum & Chemical Corp.:
Adds heat treat aluminum sheet facilities, Trentwood, B, 5/27, p.31
Aluminum alloy X70039 dev., 2/25, p.30
Blank checks provided venders cut purchasing paperwork, 3/4, p.30
Buying aluminum extrusion plant, Tex., from Capitol Products, B, 6/3, p.35
Elects Ready president to succeed Rhoades, 2/11, p.35
German project gets wide plate mill, 4/1, p.27
New five strand rolling mill, Ravenswood Wks., 3/11, p.69

Kaiser Engineers Div.:
5.5 per cent of steel made by L-D process, 1/21, p.27

Kaiser Jeep Corp.:
Was Willys Motors, B, 4/22, p.35

Kaiser Refractories:
Australian plant, Port Kembla, 6/24, p.35
New plant, Moss Landing, Calif., 3/25, p.84

Kaiser Steel Corp.:
Emerson: We talk everything but pricing, 4/22, p.210
Expands welded structural facilities, 2/4, p.27
Freight car plant nearby sought, 5/6, p.89
Paycheck bonus, Fontana mill, 6/10, p.19
Progress Sharing booklet released, 1/14, p.23
Progress sharing, will incentive units do harm? 1/21, p.24
Progress sharing vote, workers briefed, 1/7, p.27
Progress sharing, executives briefed, 2/18, p.25
Profit sharing estimated average of 10c an hour, 3/11, p.31
Progress sharing plan-bonus, 5/6, p.25
Steel dumping charge (Japan), 2/11, p.18

Kalamazoo Tank & Silo Co.:
Automatic manual band cutoff machine, IE, 6/10, p.186

Kaman Aircraft Corp.:
Neutron analysis generator-portable, IE, 6/10, p.187
Neutron activation analysis system, 6/10, p.103

Kaufman Tool & Engineering Corp.:
Rubber draw die, no scratch, 2/11, p.93

Kawecki Chemical Co.:
Buys Metalonics, B, 1/14, p.28

Kaynar Mfg. Co. Inc.:
Buys Greer Stop Nut, B, 6/3, p.35

Kearney & Trecker Corp.:
Easy payments for tools, Cash-Flo plan, 3/4, p.106

Kennametal Inc.:
Hard carbide cutting grades K68 and 45, IE, 5/6, p.140
Tips on machining high alloys, 4/22, p.137
Unit ends chatter and vibration, 5/13, p.73

Kennecott Copper Corp.:
Expansion program ($100 million), 2/25, p.30

Kerr-Wireryte Co.:
Formed by merger, 1/21, p.29

Keystone Steel & Wire Co.:
Builds research center, 3/25, p.33

Kidde Constructors Inc., Walter:
Plant design of future, separation of men and machines, 2/4, p.42

King-Seeley Thermos Co.:
Add-on control automates drill presses, Cam-Act, IE, 4/29, p.104

Klein & Associates:
Fringe benefits report, 6/3, p.58

Knapp Design Associates Inc.:
The case for design beyond engineering, value analysis, 5/13, p.71

Knight Machinery Co., W. B.:
Measuring machine, IE, 1/14, p.98

Kobzy Tool Co.:
Buys Perfecto Eng., B, 2/4, p.28

Koppers Co. Inc.:
Continuous casting machine (square billets) built for Seaway, 3/18, p.33
Continuous casting machine, automated control, 6/3, p.27
Engineering study-raw material handling, Zug Island, 3/25, p.35
Morocco discusses steel mill construction, 4/15, p.17
Tunstead: Adopt product manager concept to find new markets, 2/4, p.38

Koppers of Turkey Inc.:
Hagan: Sell U. S. knowhow, 5/27, p.18

Koppy Tool & Die Co.:
DeGain: Computers sacrifice ideas, 1/7, p.136

Krautkramer Ultrasonics Inc.:
Nonrotating tube, bar testing, 6/24, p.81
Portable inspection instrument checks flaws, 4/15, p.141

Kux Machine Co.:
Diecaster-conveyor, IE, 1/7, p.318

L

Landis Machine Co.:
Bolt thread cutting machine, IE, 4/22, p.226

Landis Tool Co.:
Tool buying can't be reduced to formula, 2/18, p.102

Lapointe Machine Tool Co.:
Broacher milling auxiliary, IE, 2/18, p.112

LaRose & Associates Inc., W. T.:
Sealer, silicone rubber compound, 5/13, p.72

Lasalco Inc.:
Cycle changes easy on plating machine, 4/1, p.110

LaSalle Steel Co.:
Develops Super Surface steel bars, 5/28, p.25

Latrobe Steel Co.:
$13 million plant and equipment expansion program, 3/11, p.33
GE contract for specialty steels furnace, 1/21, p.30
Service center in Conn., B, 5/27, p.33

Lavino & Co., E. J.:
New basic brick stronger when hot 'direct bonded,' 6/17, p.80

Lear Siegler Inc.:
Astro Structures: Shear spinning makes thinner pressure vessels, 1/21, p.33
Green laser for underwater military use, 2/18, p.17

Lectromelt Furnace Div.:
See McGraw Edison

Leeds & Northrop Co.:
Analog computer for Detroit Edison generator, 4/22, p.31
Master instrument for car bottom furnace, 2/18, p.69
Plug-in thermocouple cartridge checks carbon equivalent, IE, 4/1, p.111

Lees-Bradner Co.:
High speed thread miller, IE, 2/18, p.111
Hobber for sun gears minimizes shaving, IE, 1/28, p.113
Thread miller makes disc, face type cams, E, 6/24, p.131

Lehigh Inc.:
Air pressure powers short stroke press, IE, 6/17, p.136

Leitz Inc., E.:
Metal structures studied hot, vacuum furnace, 4/1, p.52

LeMaire Machine Tool Co.:
Horizontal drill uses 7 ton master fixtures, IE, 2/18, p.117

Lempco Products Inc.:
Joint venture with Danish firm, 4/8, p.27

Lennox Tool & Machine Builders:
Buys Excelsior Tool, B, 5/20, p.35
Buys Gemco line, B, 1/14, p.28

Lepel High Frequency Laboratories Inc.:
Convertible generator for induction heating, IE, 3/18, p.202

Lewis Machine Co.:
Unit straightens, travel cuts steel, built for Standard Screw, 6/3, p.35

Lewis Welding & Engineering Corp.:
Automatic welding head manipulator, IE, 4/15, p.133

Lima Electric Motor Co.:
Constant hp drive remotely controlled, IE, 5/20, p.117
Synchronous generators, IE, 3/25, p.201

Lincoln Electric Co.:
Announces price cuts (cost cutting formula, yearend bonuses), 2/11, p.31
Combination, dc welder and ac auxiliary power supply, IE, 6/10, p.180

Lindberg Engineering Co.:
Bought by Basic Products, 1/7, p.33
Electric furnace treats 600 lb per hour, IE, 4/22, p.226
French gantry furnace, 4/29, p.54
Sintering, cold wall furnaces, IE, 6/10, p.179

Linde Co.:
Contract to Kaiser for liquid hydrogen plant, 2/11, p.33
To produce carbon steel welding wire at Ashtabula, 4/22, p.35
Tungsten carbide coating for sheet stock, IE, 1/7, p.309
Welding unit (for NASA Centaur booster) cover pic., 4/15, p.64

Line Material Industries:
Transformer housing, reinforced plastic shell, 3/11, p.62

Ling-Temco-Vought Inc.:
Automatic fusion welder joins thin titanium, 6/10, p.117
Sorghum molasses used to refine metal grain during copper electroplating, 6/10, p.96

Link-Belt Co.:
Ball bearing line, IE, 5/6, p.146
Speed reducer line, IE, 4/1, p.112

Livernois Engineering Co.:
Transfer unit automates OBI presses, IE, 4/8, p.118

Lock Rings Inc.:
Formed, B, 6/3, p.35

Lockheed Aircraft Corp.:
2000-mile-an-hour transport prototype, 6/24, p.19
Builds missile research center, Ala., 3/4, p.33

Lockheed-Georgia Co.:
Aluminum forgings for jet airfreighter, 2/25, p.66

Lodge & Shipley Co.:
Heavy duty lathe tailored to NC potential, IE, 4/29, p.97

Logansport Machine Co.:
Hydraulic presses, IE, 3/25, p.190

Loma Machine Mfg. Co.:
Cold saw cuts slabs, billets, IE, 2/4, p.100

Lombard Corp.:
Agreement with Bliss for tube and bar drawbenches, 2/25, p.31

Lord Mfg. Co.:
Thorn: Reliability improved, 5/27, p.20

Loud Machine Works Inc., H. W.:
Switch to forgings (cylinder caps of AISI 4130 alloy eliminated leakage problems), 1/28, p.55

Ludlow Valve Mfg. Co.:
Merges with Patterson complex, 2/25, p.32

Lufkin Rule Co.:
Optical comparator, portable, IE, 2/25, p.119

Lukens Steel Co.:
Briqueting press for U. S. Industries, 1/21, p.30
Carbon plate steels introduced (M-Series), 1/21, p.28
Clad steel plate price cut, 4/1, p.72
Computerized electric furnace proposed, 2/25, p.18
Giant steel plate for generator, 5/27, p.31
Plates produced for giant reactor vessel, 2/25, p.28
Vacu-Blaster, new slab cleaning machine-dustfree, 1/28, p.54

Luria Bros.: See Ogden Corp.

Mc

MacDermid Inc.:
Chromate conversion coating (Macro Brite), IE, 1/14, p.103

MacLeod Instrument Corp.:
Digital plotters, IE, 6/17, p.128

McCulloch Corp.:
Rectifier unit for portable arc-welder, IE, 4/15, p.140

McDowell Co.:
Belt feeder control, ABC Scale Div., IE, 2/11, p.188

McGraw Edison Co.:
Oswandel (Lectromelt Div.): Who's to buy the 25 vacuum furnaces? 2/4, p.25

McJunkin Corp.:
Buys Culbert Pipe, B, 2/25, p.32

McKay Machine Co.:
Federal-Warco: Flashwelding-trimming combined, IE, 3/11, p.114
Federal-Warco: High speed, automatic shell forming and mash seamwelder, IE, 5/20, p.118
Spank press, height minimized, IE, 5/13, p.159

McKinsey & Co.:
Manager's role in computer success, survey, 4/29, p.31

McLouth Steel Corp.:
Computer operates hot strip mill, 2/18, p.31
Computer on hot strip mill (cover), 4/8, p.53
Contract for continuous pickling line, Gibralter, Mich., plant, 4/22, p.35

M

3M Co.: See Minnesota Mining & Mfg.

MB Electronics:
Vibration pickup spotted with tube voltmeter, IE, 3/11, p.112

M-H Standard Corp.:
Compact vertical conveyor handles cartons, IE, 5/6, p.147
Scrap handling conveyor, IE, 2/25, p.122

M&M Tool & Mfg. Co.:
Power package on rotary table, IE, 3/18, p.192 and 5/13, p.158

M&T Chemicals Inc.:
Aluminum immersed in tin for plating, 2/4, p.20
Self-regulating hard chrome plating solution, aids etching, TO, 6/24, p.130
Vinyl foam coating (Unichrome Plastisol) for metal parts, 3/11, p.63

Machlett Laboratories Inc.:
TV camera tubes for x-ray metal study, 2/11, p.119

Macrosonics Corp.:
Ultrasonic generator, multifrequency, IE, 6/17, p.130

Magnaflux Corp.:
Bought by Champion Spark Plug, 6/24, p.35
Eddy current (electronic detection) ups pipe coupling quality, 6/3, p.68
Eddy current system tests race car valve faces at Indianapolis, 6/17, p.18
Ultrasonic inspection unit, IE, 1/7, p.309

Magnetic Metals Co.:
Forms Canadian subsidiary, B, 6/10, p.35

Mallory & Co. Inc., P. R.:
Mallory (president): Merger of organization line and staff to meet new markets, 3/4, p.52

Manganese Steel Forge Co.:
New process hardens manganese steel, 3/18, p.106

Marblette:
Aluminum filled epoxies for heat resistant tooling, 2/4, p.102

Marcus Tools Corp.:
Twist drills, roll forged, TO, 6/17, p.20

Marion Power Shovel Co.:
NASA contracts for huge crawler transports, 2/18, p.18

Marquette Tool & Die Co.:
Machinable carbide die (Ferro-Tic C) punches hole in costs, 6/17, p.31

Martin Co.:
Halpin: Quality control man in dilemma, 1/7, p.292
Hot sandwich oven, refractory honeycombs, TO, 5/27, p.20
Missile data over telephone lines with Dial-o-verter, 2/25, p.63
Small business forums, 1/7, p.146
Underwater tank of future (cover), 5/27, p.74
Value analysis booklet (production cost vs. tolerances and finishes), 2/18, p.56
Value analysis program, Orlando, Fla., 5/27, p.91

Martin Engineering Co.:
Vibration inducers, IE, 1/21, p.94
Vibrotor series, IE, 2/11, p.186

Martin Metals Co.:
Cobalt base alloy dev., SM 322, 1/28, p.30

Materials Research Corp.:
Compact thermoelectrics by evaporation process, 3/4, p.71

Mathews Conveyer Co.:
Line roller conveyor, IE, 6/24, p.136

May-Fran Mfg. Co.:
Metal chip removal conveyor, Chip-Tote, IE, 5/13, p.161

Mead Corp.:
Fiberboard material handling trays, IE, 1/14, p.99

Mergenthaler Linotype Co.:
Merges Electra Corp., B, 5/20, p.35

Mesta Machine Co.:
Contracts for Bethlehem and Castle & Co., B, 5/20, p.33

Metal Removal Co.:
Fiber glass reinforces grinding wheels, IE, 4/15, p.135

Metals & Controls Inc.:
Overheat protector kit for motors, IE, 3/4, p.117

Metco Inc.:
Nickel aluminide coating, 5/13, p.33
Redesigned metallizing gun, IE, 3/11, p.114

Metra-Tech Corp.:
Scale readings in tenths, IE, 1/14, p.94

Meyers ElectroCooling Products Inc.:
Cutting tools cooled thermoelectrically, 5/13, p.80

Michigan Bell Telephone Co.:
McCarthy addresses Maintenance Show; Supervisors unfit for job, 2/11, p.112

Michigan-Dynamics Inc.:
Merger, B, 6/3, p.35

Michigan Machine & Broach Co.:
Horizontal broacher does small, internal jobs, IE, 1/7, p.303

Michigan Wire Cloth Co.:
Merges, B, 6/3, p.35

Micromatic Hone Corp.:
Fabroid Div., Calif., B, 2/25, p.32
Fixturing jig on Hydrohoner, 2/11, p.93

Micrometrical Mfg. Co.:
Surface profiles drawn without touching work (noncontact measuring system), 5/27, p.151

Midland-Ross Corp.:
Buys J. Leukart Machine, B, 2/4, p.28
Changes Owosso Div. name to Power Controls, B, 4/22, p.35

Milford Rivet & Machine Co.:
Horizontal riveters, automatic feed, IE, 5/6, p.149
Rivet setting machines, IE, 3/25, p.191

Miller Electric Mfg. Co.:
Unit designed for reproducible welds, IE, 5/13, p.165
Unit handles programed welding sequence, IE, 4/15, p.136

Miller-Stephenson Chemical Co. Inc.:
Mold release lubricant, fluorocarbon type, IE, 1/14, p.103

Milwaukee Electric Tool Corp.:
Circular saws, 6½ in. blades, IE, 4/15, p.136

Mimik Tracers Inc.:
Feed control package (Dynatrace) fits engine, turret lathes, IE, 6/3, p.111
Tracing line, 5/13, p.72

Minneapolis-Honeywell Regulator Co.:
An overgrown product line (replacement controls), 1/7, p.162
Data processing (computer) potential (inventory control, accounting), 4/1, p.67
Electrohydraulic tracer drives, IE, 5/27, p.144
Honeywell's Binger: Systems concept, advice for suppliers, 6/17, p.28
Thermostat (tube-type) accurate within 1/10° F, 1/21, p.39

Minneapolis Mining & Mfg. Co.:
Adhesive, high peel strength, IE, 2/4, p.98
Adhesive seals fibrous insulation, IE, 6/24, p.139
Auto afterburner for smog control, 1/21, p.72
Beecroft: Industrial momism no way to help salesmen, 1/28, p.98
Finishing wheel-Scotch-Brite, IE, 1/14, p.94

Minneapolis-Moline Inc.:
Fork lift for crowded aisles, IE, 5/6, p.139

Minster Machine Co.:
Car bottom furnace paying off, 2/18, p.69

Missouri Diecasting Corp.:
Solves problem of casting furnace blower housing in one piece, 1/28, p.48

Modern Plastic Machinery Corp.:
Equipment modernizes injection molders, IE, 1/7, p.315

Molectrics Inc.:
Unit cleans and machines metal parts at same time, 2/4, p.20

Monk & Associates Inc., Howard H.:
Glynn: Sales promotion programs, 4/15, p.124

Monsanto Chemical Co.:
Enters copper powder field, 6/10, p.124

Moog Servocontrols Inc.:
Electrohydraulic flying cutoff control, IE, 3/25, p.192
Tape preparation and checking done by machinists, 4/15, p.33

Morgan Construction Co.:
License with Kocks for wire rod mills (German design), 3/18, p.33

Motec Industries Inc.:
Sold, B, 1/28, p.32

Motion Indicating Devices:
Mechanical wear factors checked by motion indicating device, IE, 3/11, p.112

Murray-Way Corp.:
Abrasive belt head system wet grinds strip, IE, 1/28, p.105

Mutual Products Co. Inc.:
Buys Metal Specialties, B, 4/1, p.28

N

NRC Equipment Corp.:
Electron beam welder runs on low voltage, IE, 6/17, p.130

NTW Missile Engineering Inc.:
Roll extrusion (new), prototype machine extrudes big cylinders, IE, 1/14, p.26

Naico Chemical Co.:
Chemical lubricant increases cold heading tool life, IE, 6/3, p.110
Oil serves dually, gear lube or cutting, IE, 2/11, p.190

National Broach & Machine Co.:
Automatic electric brake feature of gear speeder, IE, 1/28, p.105
Unit detects nicks in gears, IE, 6/17, p.137
Universal rotary gear shaving machines, IE, 5/27, p.144

National Carbon Co.:
Graphite felt insulation in vacuum furnaces, 5/6, p.76
Material conducts, insulates (boron nitride), 4/8, p.59

National Controls Corp.:
Air pollution control systems, 4/8, p.27

National Cylinder: See Chemetron

National Electric Welding Machines Co.:
Arcweider, cast and finned cooling segments cut part distortion, 5/13, p.88

National Helium Corp.:
Heat exchanger assembled for cryogenic use, 5/27, p.33

National Lead Co.:
Doehler-Jarvis: Diecast aluminum 'floating floor' plate, 5/27, p.26
Encapsulation-plastic jackets, new Nalcons, 6/24, p.32
Shipping containers for spent nuclear fuel elements, 6/10, p.115

National Patent Development Corp.:
Russian continuous casting license, 6/17, p.29

National Research Co.:
Acquisition bid by Norton, 2/11, p.33
Cold welding experiments, 6/17, p.31
Dr. Torti: Once spurned tantalum now on aerospace list, 2/11, p.90
Vacuum coating process, metal corrosion protection, 1/14, p.26
Vacuum diffusion pump, IE, 4/22, p.224

National Ultrasonic Corp.:
Cylinder blocks, castings cleaned by agitation, IE, 4/29, p.100

National-Standard Corp.:
Tool life increased by stress relief process, 2/11, p.101

National Steel Co.:
Jointly forms Itmann Coal Co., B, 2/11, p.35

Nationwide Leasing Co.:
'Million dollar financing plan', 3/4, p.30

Nelson Stud Welding:
See Gregory Industries

New Jersey Zinc Co.:
Award winner: Copper powder automotive rectifier base, 4/15, p.31

New Products Institute Inc.:
Hilton: Converting new products into gold mines, 3/11, p.100

New York Air Brake:
B-I-F Industries Div.: Screw type feeder, IE, 5/20, p.108

New York Wire Cloth Co.:
Now New York Wire Co., 5/6, p.35

Newport News Shipbuilding & Drydock Inc.:
May win hydraulic turbine award, Millers Ferry, Ala., 6/3, p.18

Newaygo Engineering Co.:
Pneumapump system moves sand, dry materials, IE, 5/20, p.108

Niagara Machine & Tool Works:
Press brake improvements, IE, 6/17, p.128
Series BP automatic presses for blanking, forming, IE, 1/21, p.94

Nickleson Tool & Die Co. Ltd.:
Nesting blocks-universal clamps secure work, 3/18, p.111

Niles Steel Tank Co.:
Semiautomatic Squirt welding (tank shells), 2/25, p.51

Noble & Westbrook Mfg. Co.:
Unit roll grooves cylinders, IE, 3/25, p.201
Unit roll marks metals, IE, 3/18, p.195

Non-Linear Systems Inc.:
High speed data system measures dc voltage, IE, 1/7, p.317
Unit checks daily production (statistical graphs), 2/18, p.112

Nordson Corp.:
Paint setup on wheels, IE, 1/7, p.308

North American Aviation Inc.:
Ablative coatings resist missile heat, 6/3, p.31
Ablative coating (plastic), metal insulator, 6/3, p.73
Atwood addresses Chicago Space Conference, 5/13, p.18
Autonetics: Beryllium use for instruments, stability and accuracy, 6/17, p.85
Interferometer (helium-neon laser) measures distance between two atoms, 4/8, p.20
Purge chambers for inert gas welding of titanium, 2/18, p.59
Silver brazing alloy, 2/18, p.58

Northfield Foundry & Machine Co.:
Saw with tilting arbor, variable speeds, IE, 3/18, p.192

Northrop Corp.:
Automated Operations Control, Norair Div., 4/15, p.20
Laminate flow control (LFC), saw used to slit wings and fuselage surfaces, 6/10, p.98

Norton Co.:
Bids to acquire National Research, 2/11, p.33
Reactive dressing keeps grinding wheels sharp, 1/21, p.20
Surface grinder-high speed traverse, IE, 4/8, p.121

Nu-Matic Grinders Inc.:
Belt grinder, IE, 6/17, p.131

Numerical Control Corp.:
Continuous path N/C unit, mechanical system, IE, 5/13, p.165

Nylok Corp.:
Licensing can be profitable, 1/14, p.49

O

Ogden Corp.:
Ablon (Luria official) sees new era for scrap, 1/28, p.98

Ohio Crankshaft Co.:
Device anneals pinion shafts, IE, 2/11, p.189

Ohio Electric Mfg. Co.:
Lifting magnet, 4000 lb, 2/11, p.188

Ohio Gear Co.:
C flange mountings on speed reducers, IE, 3/4, p.121

Okonite Co.:
Revises pricing on instrument tubing, 4/8, p.87

Olin Mathieson Chemical Corp.:
O'Connell gives management view on NLRB rulings, 4/1, p.21

Optical Gaging Products Inc.:
Contour projector, improvement, IE, 3/25, p.196

Orbit Instrument Corp.:
Finances for Italian facility, 6/3, p.102

Osborn Mfg. Co.:
Ramron-grinding wheel on display, IE, 3/25, p.195

Otis Elevator Co.:
Hi-Taller fork trucks, Baker Div., IE, 6/10, p.179
Work station, Calif., for electronic assembly, 1/14, p.28

Outboard Marine Corp.:
Evinrude: Alloy plus stainless composite (propeller shaft for outboard motor), 5/27, p.86

P

Pace Controls Corp.:
Measuring system, optical scanner, IE, 5/6, p.151

Pacific Industrial Mfg. Co.:
Press brake, 100 strokes per min., IE, 2/11, p.183

Package Machinery Co.:
Diecasters rated at 600 tons, Reed-Prentice, IE, 5/13, p.162

Page-Hersey Tubes Ltd.:
Buys huge resistance welding unit to produce ½ in. wall pipe, 3/4, p.31

Palmgren Steel Products:
Rotary table 10 in. diameter surface, IE, 2/25, p.118

Pandjiris Weldment Co.:
Boom manipulator, IE, 1/28, p.110
Welding seamer for missile shells, IE, 3/4, p.117

Pangborn Corp.:
Vibratory finisher, IE, 5/20, p.112

Panther Chemical Co. Inc.:
Chemical additive for electrolytic cleaning, IE, 6/24, p.139

Paradiso Associates:
Von Kleydorff: U. S. business outlook in Europe, 2/11, p.176

Parker-Hannifin Corp.:
Bender shapes tubing, IE, 1/14, p.94
Buys Gibbons Salem Machine, B, 4/22, p.35

Parker-Hannifin (Canada) Ltd.:
Established, B, 4/29, p.30

Patterson Foundry & Machine Co.:
Buys Colonial Iron Wks., B, 3/25, p.35
Member of Patterson complex (firms), 2/25, p.32

Patterson Industries:
Buys Skinner Engine, B, 6/17, p.35

Pettibone-Mercury Corp.:
Giant lift truck uses GE's motorized wheel (cover), 2/11 issue

Pfaudler Permutit Co.:
Waste recovery, evaporation system (switch from cyanide method), 2/11, p.119

Philadelphia Resins Inc.:
Epoxy coating, IE, 3/18, p.190

Philco Corp.:
Demonstrator for teaching maintenance-electronic instrumentation, 2/11, p.19
Modernization program, 2/4, p.26

Philips Electronics Instruments:
TV x-ray shows moving parts, IE, 2/18, p.112

Philips Electronics & Pharmaceutical Industries Corp.:
Spectrometer checks six elements at once, IE, 6/24, p.139

Phoenix Steel Corp.:
Closes Chester blast furnace, 4/8, p.87

Picker X-Ray Corp.:
Pipe welded seams, X-ray, TV test, 5/6, p.33
Radioisotope cameras light in weight, IE, 4/15, p.136

Pierce-West Inc.:
Grinding attachments-accuracy, IE, 4/1, p.110

Pines Engineering Co. Inc.:
Automatic cutoff, Dyna/Cut tube machines, IE, 2/4, p.101
Cutoff machine, advantages, IE, 4/22, p.217
Tube, rod end finisher, IE, 3/25, p.198

Pinkerton Electro-Security Corp.:
Radar alarm system, IE, 6/10, p.188

Pittsburgh-Des Moines Steel Co.:
USW labor pact, 6/24, p.27

Pittsburgh Plate Glass Co.:
Adhesive combines two advantages, IE, 6/17, p.128

Pittsburgh Steel Co.:
Maxwell Jr.: Proposes consumption tax, 2/4, p.17
Maxwell: Explains need for profits, 4/8, p.106

Pittsburgh Steel Foundry Co.:
Changes name, B, 3/11, p.35

Plasmadyne Corp.:
Atmosphere chamber for plasma spraying, IE, 3/4, p.123

Pneuco Machinery Co.:
Press brake air actuated, IE, 4/29, p.105

PneumoDynamics Corp.:
Offer to buy Jones & Lamson, 1/21, p.29

Polymer Corp.:
Fluorosint material, 4/15, p.79

Portage Double-Quick Inc.:
Adjustable cutoff tools, IE, 6/10, p.194

Porter Company Inc., H. K.:
Buys Simonds Worden White, B, 4/22, p.35
Refractory facilites for Vanport, Pa., 1/21, p.67
Riverside-Alloy, continuously cast wire, 5/6, p.74
Vulcan-Kidd fluted, ingot mold design improves steels, 3/4, p.20

Powder Alloys Corp.:
Heavy metal alloys, higher density, 1/7, p.168

Power Control Products Inc.:
Air operated, portable coil, strip feeder, IE, 5/20, p.117

Precision Spring Corp.:
Buys Harper Mfg. and changes name to Lock Rings, B, 6/3, p.35

Precision Tool Mfg. Co. of Illinois:
Drill has 18 or 24 spindles, IE, 4/8, p.117

Precision Welder & Flexopress Corp.:
Press accurate at high speed, IE, 2/4, p.106
Press feed operated by electric eye, IE, 5/27, p.151
Resistance welder employs foil-buttseam (car body tops), 4/22, p.152
Transistor welder, IE, 4/1, p.114

Prentice-Hall Inc.:
6 month forecast-industrial production, 5/13, p.17
Urban renewal spending, 4/29, p.18

Pressed Steel Co. Ltd.:
Coil processing line knocked down for shipment, 4/29, p.30
Paint deposited from water solutions electrically, 5/6, p.74

Pressure Blast Mfg. Co.:
Options offered for wet blast machines, IE, 5/6, p.144
Semiautomatic dry blast finisher, IE, 6/10, p.194
Wet blast cabinet, IE, 1/7, p.310

Price Co., H. C.:
CO_2 pipeline welding, 1/21, p.20

Production Tool Corp.:
Moves headquarters to new plant, B, 1/28, p.32

Punch Products Corp.:
Unipress holder for punching, IE, 4/22, p.224

Pyrotel Corp.:
Portable pyrometers, IE, 3/4, p.123

Q

Quinnico Inc.:
Special crane grab handles aluminum ingots, IE, 5/6, p.153

R

Radio Corp. of America:
Copper clad plastic can be punched (printed wiring boards), 4/1, p.52
Plastic based laser uses europium, Princeton lab, 3/26, p.76

Radionics Inc.:
Cobalt 60 Gammatron checks castings, IE, 6/24, p.132

RayData Corp.:
Battery powered balancer, analyzer, IE, 1/21, p.88

Raymond Corp.:
Lift truck holds rider, pallets, IE, 6/10, p.182

Raytheon Co.:
Automated distribution system serves one market with single inventory, 2/18, p.61
Laser most powerful to date, 2/4, p.20

Ren Magnet Wire Co.:
Pallet protects thin strip, 4/8, p.58

Rebel Steel Corp.:
Continuous casting mill planned for Tenn., 6/10, p.31

Recordak Corp.:
Automated information retrieval system, IE, 6/3, p.109
Image quality on 35 mm microfilm, IE, 5/13, p.160

Reed-Prentice: See Package Machinery

Reeve Electronics Inc.:
Soldering equipment brazes fittings to tubing, IE, 3/18, p.197

Reliance Electric & Engineering Inc.:
Digital control counter controls strip feed, IE, 1/21, p.90
Gear motors mounted on driven shaft, IE, 3/25, p.196
New vs. Statatron II rectifier line, (solid state speed drives), 1/21, p.29; and 1/28, p.106
Silicon controlled rectifier reversing drive rated 1/3 to 1/4 hp, IE, 6/3, p.111
Variable speed drive, high capacity belt and belt tensioning device added, IE, 5/6, p.146

Rem Sales Inc.:
Digital index control for miller, IE, 2/11, p.186
Milling machine control-automatic, IE, 1/14, p.101
Milling machine redesign, IE, 4/1, p.116

Renault Inc.:
Grob: Idea swap essential for world trade, 2/25, p.104
Grob: Replacement parts for imported cars, good market for U. S. makers, 2/25, p.29

Ren Plastics Inc.:
Epoxy plastic tooling materials dev., IE, 4/22, p.220

Republic Steel Corp.:
Architectural stainless sheets textured with brick dust, 1/28, p.18
Automatic bar classifier detects seams, 5/27, p.31
Bar mill resumes operation, Cleveland, 1/4, p.19
Basic oxygen furnaces (6) installed (Cleveland, Warren, and Gadsden), 4/1, p.27
Bright annealing line installed at Massillon, 3/11, p.33
Buttweld pipe, Farrowtest, 3/18, p.108
Capital spending boost, 5/13, p.19
Facilities improvement program, 5/20, p.33; correction on Niles thin tin plate mill, instead basic oxygen furnaces, Cleveland, Gadsden, 5/27, p.31
Michelon: Personnel's changing role (conference speaker), 2/4, p.25
Plastic coated steel tubing 'X-Trube', 3/25, p.80
Reopens pipe mill, Gadsden, 2/18, p.74

Resources for the Future Inc.:
Capital spending projection for year 2000, 4/1, p.25

Rex Co., J. W.:
Buys Florida Gears, B, 4/8, p.28

Reynolds Metals Co.:
Aluminum pellets smaller than rice grains, new sheet rolling process, 3/4, p.30
Aluminum pellets to sheet in one step (new process in Bellwood, Va., plant), cover story, 4/1, p.39
Aluminum potlines reactivated, 6/10, p.146
Aluminum screw machine stock, IE, 1/7, p.307
Builds aluminum beer can plant, St. Paul, B, 2/11, p.35
Builds Nova Scotia can plant, B, 6/24, p.32

Rheem Mfg. Co.:
Plastic protects metal edges, TO, 6/10, p.20
Steel shipping containers, plastic fused to interiors, 2/25, p.51

Rhode Island Engineering & Mfg. Corp.:
Horizontal spinning lathe, IE, 6/10, p.189

Ridge Tool Co.:
Parcell: Small firms techniques to enter new markets, 3/4, p.53

Roanoke Electric Steel Corp.:
Continuous cast steel bars at new plant replacing ingots, 5/13, p.29

Robbins & Myers Inc.:
Compact C Series motors, IE, 6/3, p.117
Cranes made for intermittent duty, IE, 6/17, p.134
J-3 hoist line, IE, 2/18, p.114

Roberts Co., C. A.:
Square tubing line, IE, 1/28, p.106

Robertshaw Controls Co.:
Was Robertshaw - Fulton, and Bridgeport Thermostat now Milford Div., 4/22, p.35

Robin Products Co.:
Plastic fasteners hold, seal, insulate trim, 3/25, p.78

Roblin-Seaway Industries Inc.:
Enters continuous casting field, 1/28, p.31

Rockbestos Wire & Cable Co.:
Wires, cables resist heat and radiation, IE, 6/17, p.137

Rockwell Mfg. Co.:
Research lab, new center, IE, 6/24, p.33

Rockwell-Standard Corp.:
Mercury vapor lighting, Spring Div., 5/27, p.94

Rohr Corp.:
NASA award for antenna system, 3/11, p.68

Romich Corp.:
Immersion lead tester for porous parts, IE, 3/4, p.118

Ronson Metals Corp.:
Didymium-rare earth, lower priced, 6/24, p.76

Ross & Son Inc., Charles:
Planetary mixers, IE, 1/14, p.103

Roteck Inc.:
Wire race bearings dev., 5/27, p.26

Roto-Finish/Ransohoff:
Vibratory finisher-end unloading type, IE, 3/25, p.201

Ryan Aeronautical Co.:
Cast steel dies used to explosive form Saturn bulkheads, TO, 6/10, p.20
Machine performs functions of four, IE, 1/14, p.104

Ryerson & Son Inc., Joseph T.:
Extra charges revised, 2/4, p.57
Price revision in Philadelphia, 2/18, p.74
Pricing revision on carbon steel products, 3/4, p.77

S

St. Joseph Lead Co.:
Strike ends, 4/8, p.87

St. Louis Die Casting Corp.:
Vacuum melted steel doubles die life, 2/11, p.101

St. Mary's Mfg. Corp.:
Buys K&W Tool Products, B, 3/4, p.31

SKF Industries Inc.:
Automates Hofors (Sweden) steel mill, electronic data processing, 4/1, p.27
Engineering and research lab (bearings), King of Prussia, Pa., 6/17, p.33

S & S Machinery Co.:
Table positions on X, Y axis, IE, 2/4, p.105

Sandy Hill Iron & Brass Works:
Coolant clarifier ends calender roll tailmarks, 6/10, p.117

Sara Lee Kitchens:
How systems concept worked in computer installation, 6/17, p.28

Selaky Bros. Inc.:
Arc spotwelder fastens thin bracket to missile section, 4/29, p.57
Automatic fusion welder joins thin titanium, 6/10, p.117
Giant positioner, IE, 4/22, p.218
Spotlight locates work, IE, 2/4, p.98
Tig spotwelder, high weld consistency, IE, 2/4, p.100
Welding positioner king sized, IE, 2/25, p.122

Screw & Bolt Corp. of America:
Chemical bonding tech. for Jay-Lok fastener, 5/6, p.31

Scully-Jones & Co.:
C.O.S.T. boosts sales, marketing campaign, 4/8, p.60
Tooling (Insta-Set) system solves short run problems, 6/24, p.72

Sealed Power Corp.:
Melts high grade iron from low cost scrap (cover), 1/28, p.44
Modernization programs (feature story), 1/28, p.45

Sears, Roebuck & Co.:
Gas and electric home ranges die-cast in zinc by Hilfinger, 1/28, p.58

Selas Corp. of America:
Study on range of protective gases, 5/13, p.17

Selectrons Ltd.:
Hard anodizing unit does plating, IE, 2/25, p.121

Seneca Falls Machine Co.:
Monitor device warns of motor malfunctions, IE, 3/25, p.193
NC system 'Tapetronic,' IE, 4/8, p.123

Sendzimir Inc.:
Agreement with Concast for selling equipment combinations, 1/14, p.27

Servonic Instruments Inc.:
Buys Dynamic Measurements, 1/21, p.29

Sharon Steel Corp.:
Acquiring Union Steel, 1/14, p.27
Kaldo basic oxygen facilities, 6/3, p.72

Sheehan Co., R. T.:
Conveyors equipped with pin-drive pulley, belt, IE, 2/18, p.119

Sheffield Corp.:
Air gages in Ford-Werke's facility, 4/8, p.104
Crushtrue grinding machine, IE, 2/11, p.183
Grinding machine, gages at ASTME show, IE, 4/22, p.217
Ultrasonics assists grinding (AF contract), 4/15, p.31
Ultrasonic vibrations help grinding, 5/20, p.56

Sheffield Div.: See Armco

Sheldon Machine Co. Inc.:
Accessory units for turret lathes, IE, 4/22, p.223
Chucking machine turns, bores, faces, IE, 5/13, p.155

Shenango Furnace Co.:
Shenango-Penn Div. buys R. D. Wood, B, 5/20, p.35

Schick Inc.:
Heat treating toughens stainless shaver heads, 3/4, p.71

Signode Steel Strapping Co.:
Mobile strapping station, IE, 2/4, p.102

Singer Mfg. Co.:
Di Scipio: Product development and diversification, sales gains, 2/4, p.34
Global marketing success, 4/8, p.103
How to pick best new markets (Falls tech.), 3/4, p.54

Smith Corp., A. O.:
Chyle visits Russia: Labor shortages spur technology, 3/11, p.100
Drops process equipment line, 2/4, p.51
Expands Electric Motor Div., B, 5/27, p.31
Laser welds metals, 3/4, p.20

Society of the Plastics Industry:
Meeting: Plasticsmakers woo design engineers, 2/11, p.29

Sommerfield Machine Co. Inc.:
Buys Sidney Machine Tool, B, 1/14, p.28

Sonotone Corp.:
Moving operations, B, 3/11, p.35

Southwest Products Co.:
High capacity bearings work in cold, heat, IE, 6/17, p.134

Sovereign Steel of Texas Inc.:
Building steel mill, Maydelle, Tex., 4/29, p.29

Sparton Corp.:
Buys Colvin Laboratories, B, 6/24, p.35

Spaulding Fibre Co.:
Resin fiber boards, IE, 4/22, p.225

Sperry Products: See Automation Industries

Sperry Rand Corp.:
Laser market forecast, 1/21, p.18
Laser pumped by gallium arsenide diodes, 2/18, p.20
Postprocessor (SYMPAC) added to direct NC systems, 2/25, p.59
Subsystem performs offline data processing, IE, 1/21, p.87
Univac introduces big little (17 lb) computer, 1/28, p.17
Univac (Retterer): Marketing computer role, 2/11, p.176

Square Wheel Co.:
Abrasive belt grinder, IE, 5/13, p.158

Stanco Mfg. & Sales Inc.:
Axial piston pump—constant pressure, IE, 2/11, p.188

Standard Oil Co. of N. J.:
Rosow: Cites need for better manpower management, 4/1, p.25

Standard Pressed Steel Co.:
Bolt locks tight if nut loosens, IE, 2/4, p.105
Hallowell: Economic security crisis calls for capital outlay, 2/18, p.31
Hallowell: Inventories, don't overinvest, 2/18, p.60
Product line diversification, 2/4, p.35
Quality assurance service (IDQA), marketing reliability, 1/28, p.53
Strength feature of titanium fasteners, IE, 6/10, p.190

Standard Screw Co.:
Machine straightens, travel cuts steel, Western Cold Drawn Steel Div., 6/3, p.35

Stanley Works:
Forms Stanley-Titan Pty Ltd., Tasmania, 5/27, p.33
Strapping dispensers, IE, 2/18, p.116

Stanton & Stavely Ltd.:
Coal injection system, Nottingham blast furnace, 1/14, p.48

Starrett Co., L. S.:
Employee completes 71 years employment, pic, 2/18, p.102

Stauffer Chemical Co.:
Joins Heraeus (Germany) to market electron beam furnaces, 4/8, p.27

Stepless Controls Corp.:
Solid state speed controller 'Speedprop.,' IE, 1/21, p.92

Stevens Mfg. Co.:
Forms subsidiary in Ontario, B, 2/11, p.35

Stocker & Yale Inc.:
Optical comparators and locating device, IE, 5/13, p.156
Screen comparator with vertical optics, IE, 6/3, p.114

Stokes Corp., F. J.:
E-Flag award presented to Garza (firms selling overseas through Stokes), 4/15, p.121

Studebaker Corp.:
1963 predictions (Egbert), maps drive to make cars pay off, 2/25, p.93
Auto Familia — tomorrow's car (pic), 2/11, p.166
Guthrie, new chairman, 6/17, p.110

Studebaker Hydraulic Products Co.:
Div. of Jones-Superior, B, 2/4, p.28

Stueck Inc., W. Whitney:
Press brake features, IE, 3/18, p.187

Summerill Stainless Tube Div.:
Drawing process makes smooth stainless tubes, 3/18, p.108

Sun Oil Co.:
Grease effective on bearings at high temps., IE, 1/14, p.94
Nonstaining cutting oils, IE, 1/28, p.111

Sunbeam Equipment Corp.:
Automatic washing-rinsing-drying unit, IE, 1/7, p.304
Furnace redesign, IE, 3/18, p.188

Sundstrand Machine Tool Co.:
Tape controlled turret machines for Alco, 1/7, p.35

Sunnen Products Co.:
Gages, honing tools, improvements, IE, 4/22, p.218

Superior Tube Co.:
Buys Molecu-Wire, B, 2/4, p.28
Superconductive wire, high ductility, 5/6, p.87

Survey Research Associates:
Dr. Laitin: Rules on how to counter employee resistance to change, 3/11, p.29

Sylvania Electric Products Inc.:
Big power press, Towanda plant, 4/8, p.25
Cutting cams, programer panel system, TO, 5/6, p.20
Finley: Purchasers new goals (value, function buying), 1/7, p.292
Machine tool system cuts cam cutting time, IE, 5/13, p.155
Nuclear fuel elements made nuclear test flexibility, 5/6, p.87
Temperature metal-ceramic coatings protection, 5/13, p.84

Systems Matrix Inc.:
Conveyor covers cut damage, IE, 1/14, p.100
Infrared detectors protect diecasting equipment, 6/3, p.60

T

20th Century Sales Corp.:
Dual spindle for gun drilling, IE, 4/29, p.102

Tabor Instrument Corp.:
Bar turning unit redesign, IE, 5/27, p.146

Tann Corp.:
Congress Tool & Die: Eight stumbling blocks to effective design, 1/7, p.282

Taylor Chain Co. Inc., S. G.:
Buys Kiln Chain, B, 5/20, p.35

Taylor Corp.:
Copper clad laminated plastic, 4/1, p.52
Glass-phenolic plastic laminate, heat resistant, IE, 5/13, p.157

Taylor Instrument Companies:
Unit checks liquid level, IE, 1/7, p.313

Taylor-Winfield Corp.:
Flash buttwelder joins bandsaw blades, IE, 6/3, p.116

Techtmann Industries Inc.:
Rotary table for heavy loads, IE, 1/14, p.95

Tempil Corp.:
Refractory paint resists heat, IE, 3/4, p.119

Texaco Canada Ltd.:
Aluminum heat exchanger beats corrosion in refinery, 3/4, p.19

Thermacote Co.:
Tig welding torch, IE, 4/15, p.137

Thermatool Corp.:
High frequency resistance welding unit for Page-Hersey Tubes, 3/4, p.31

Textile Machine Works:
Gun drill for Heald Bore-Matic, 2/11, p.92

Thiokol Chemical Corp.:
Atkinson: Growth from market diversification, 2/4, p.34
Ray Wiese, new type of manager (cover pic), 3/18

Thomas & Baldwins Ltd., Richard:
Computer system: How to automate a steel plant, 1/14, p.42

Thomas & Betts Co.:
Grinders for diemaking, 3/18, p.111

Thompson Ramo Wooldridge Inc.:
1963 defense spending predicted: J. D. Wright, 1/7, p.19
Computer for oxygen furnace, 2/25, p.20
Dr. Ramo: Foresees shortage of unskilled labor, 5/20, p.18
NC system works from computer produced tape, IE, 1/14, p.93
TRW moving operation to Cleveland, 6/24, p.33

Thomson Industries, Inc.:
Linear roller bearing dev., 5/27, p.25

Thomson Steel Polishing Co.:
Vinyl coating for stainless, aluminum, IE, 6/3, p.116

Thyssen-Hutte, August:
Merges Phoenix-Rheinrohr, 6/17, p.118

Timco Inc.:
Coating parts for electronic components makes soldering faster, 4/8, p.58

Timken Roller Bearing Co.:
Expands, Canton and Columbus, B, 6/24, p.33
Expands South African plant, B, 6/24, p.35
Machine capability studies, 6/17, p.29
Ultrasonics check pressure loss (leaks in pipe fitting, valves, etc.), 6/24, p.84

Temescal Metallurgical Corp.:
Electron beam welding power supplies, IE, 4/15, p.141

Tinnerman Products Inc.:
Buys Dominion Fasteners Ltd., B, 6/3, p.35
Plastic fastener dev., nylon expansion type, 6/3, p.70
Push-on fastener capped with plastic, IE, 2/11, p.189

Tool Steel Gear & Pinion Co.:
Plans Canadian subsidiary, B, 3/11, p.35

Torrington Co.:
Research center, B, 6/24, p.35

Towmotor Corp.:
Pancake engine on lift trucks, IE, 5/27, p.143

Townsend Co.:
Cold heading techniques, Dunn Steel Div., 5/27, p.96

Toyo Kogyo Co. Ltd.:
Automated production control system, 6/10, p.100

Trador Mfg. Co.:
Sheet metal clip-shear, IE, 4/15, p.141

Trundle Consultants Inc.:
Audit purchasing for greater profits, 1/7, p.141

Turco Products Inc.:
Turbulator tanks, fast cleaning, IE, 4/29, p.98

Tuttle & Bailey:
Efficient layout increases assembly, 4/8, p.69

Twin City Testing Corp.:
Betascope checks alloys, IE, 4/8, p.123

Tysaman Machine Co. Inc.:
Buys Ty-Sa-Man (Tenn.), 2/4, p.28

U

Udylite Corp.:
Bright nickel plating finish, Dur-Ni, Satylite process, 6/24, p.31

Unimation Inc.:
Robot type handling devices on production jobs, 2/25, p.49

Union Carbide Corp.:
Auto stainless corrosion, 10 minute test dev., 1/28, p.58
Birny Mason: Inhibiting tax structure, 5/13, p.19
Changes name of Haynes Stellite, B, 3/11, p.35
Surveys stainless users (knowledge of grades and properties), 4/22, p.29

Union Carbide Stellite Co.:
Alloy (Hastelloy X) anchors hold furnace refractory, 6/17, p.74

Union Steel Corp.:
Sold to Sharon, 1/14, p.27

United Aircraft Corp.:
Hamilton Standard's Marshall: Man on moon would stimulate business, address before analysts, 4/29, p.27

United-Carr Fastener Corp.:
Chrome plated plastic auto parts, 4/22, p.200

United Engineering & Foundry Co.:
Buys cold melt induction furnace, B, 2/11, p.33

United Nuclear Corp.:
Purity tester, helium and argon, IE, 4/15, p.134

United Process Machinery Co.:
Quail—new plastic molding unit, IE, 6/17, p.135

U. S. Baird Corp.:
Name change with purchase of U. S. Tool, 5/27, p.33

U. S. Burke Machine Tool Co.:
Defect etching machine, 2/4, p.41
Horizontal mill, optional features, IE, 6/17, p.132
Power feed table added to options on milling machine, IE, 2/25, p.116

U. S. Electrical Motors:
Enclosed and explosion proof motors, IE, 1/21, p.89
Pump motor, IE, 3/25, p.193

U. S. Electrical Tool Co.:
Snagging grinder features, IE, 1/21, p.89

U. S. Industries Inc.:
Turnover attachment for Transfe-Robot, IE, 6/24, p.135

U. S. Rubber Co.:
Develops Expanded Royalite, a thermoplastic laminate, 5/20, p.55

U. S. Steel Corp.:
American Bridge spins cables for Staten Island-Brooklyn bridge, 3/18, p.112
AS&W: Rod mill rolls ground at Cuyahoga Wks., 2/4, p.42
Blough: Spending habits, 4/15, p.17
Blough: Steel labor contract may not be reopened this spring, 2/4, p.17
Chicago S. Works: Pressure pouring process (Amsted), 6/17, p.17
Columbia-Geneva: Closes Pittsburg, Calif., facilities, 6/17, p.33
Continuous casting unit, annual report gives 'peek', 3/25, p.31
Cor-Ten used for flooring hog pens, 1/28, p.20
Duquesne Wks., new blast furnace '*Dorothy*', 2/4, p.56
Duquesne Wks., automated oxygen furnaces, 4/15, p.33
Duquesne Wks., blast furnace has third bell, 6/10, p.104
Duquesne Wks., paper tape controls new blast furnace, 5/27, p.18
Earnings at ten year low despite sales increase, 2/4, p.18
Economics lesson: Only profits solve unemployment, 3/25, p.28
Gary Wks.: Adds continuous heat treat line for plate mill, 1/4, p.28
Homestead District Wks.: Radio remote control directs slag removal, 4/22, p.35
India's Bokara mill feasibility study, 5/13, p.91
Lake Michigan submerged land reclaimed for steelworks, 5/6, p.18
Revisions in stainless prices, 2/25, p.87
Scrap cutting dock, gantries equipped with powder cutting torches, 6/10, p.115
Steel dumping charge against French pipemakers, 1/14, p.17
Steel dumping charged Japan by Columbia-Geneva, 4/1, p.24
TC&I canmaking facilities, thin tin plate, 1/7, p.33
TC&I thin tin plate mill, Fairfield, Ala., 1/14, p.27
TC&I new cold reduction mill, Ala., sheet steel and tin plate rolled, 5/13, p.29
Worthington: Lock-step technology needed, 1/21, p.25
Youngstown Wks., two new finishing lines and annealing furnaces, 3/18, p.35

Univac: See Sperry Rand

Universal-Cyclops Steel Corp.:
Buys Allegheny Steel Band and Bowman Steel, B, 4/22, p.35
Expands, adds vacuum arc remelt furnaces, B, 3/18, p.35
Stainless price changes, 3/11, p.72

Universal Engineering Co.:
Merges sales firm, B, 1/28, p.32

Universal Match Corp.:
Buys Winsmith and Black Tool, B, 4/22, p.35

Ureseo Inc.:
Magnetic particle unit, IE, 2/25, p.118

V

V & O Press Co. Inc.:
Super-T press line, 15 to 75 tons, IE, 5/20, p.114

Vacuum Specialties Inc.:
Vacuum hot press sintering furnace, IE, 2/18, p.118

Vanadium-Alloys Steel Co.:
Foreign holdings, B, 3/11, p.35
Buys Armetco, B, 5/20, p.35
High vacuum furnace goes on stream, pumping speed, 6/17, p.76
Roberts: Competition from European steelmakers, 3/11, p.17

Van der Horst Corp. of America:
Porus-Krome process, plastic lubricant, 4/1, p.52

Varian Associates Inc.:
Brazing with electron beam, vacuum lock, 4/29, p.20

Veeder-Root Inc.:
Acquiring Peck Stow & Wilcox, B, 4/22, p.35

Veet Industries Inc.:
Short run drilling machine, IE, 3/11, p.116

Verson Allsteel Press Co.:
Aluminum beer cans impact formed, 5/13, p.82
HerForming cold slugs, 3/4, p.20
Jumbo hydraulic press (hot platen) for precision layup forming, Goodyear, 6/3, p.113

Spotting machine for stamping dies made with four screw jacks, 2/25, p.20

Vibrodyne Inc.:
Vibratory cleaning-small parts, IE, 1/7, p.305

Victoreen Instrument Co.:
Technological lead, 4/15, p.18

Vitro Minerals Corp.:
Sold, B, 6/17, p.33

Volkert Stampings Inc.:
Buys Pennsylvania Tool, B, 4/8, p.28

Volkswagen:
Gap presses for roof stamping, automatic operation, 2/4, p.27

Volta Aluminum Co.:
Aluminum smelter in Ghana, B, 3/18, p.35

W

Wachs Co., E. H.:
Pipe saw cuts, bevels, IE, 4/15, p.141

Wadell Equipment Co.:
Automatic chucking unit, programmer, IE, 3/18, p.188

Wah Chang Corp.:
Lower cost dies for tungsten swaging, 6/24, p.18

Walker Mfg. Co.:
Chambered pipe exhaust on '64 autos, 3/4, p.17
Chambered pipe exhaust system eliminates muffler (probably for Thunderbird), 3/11, p.90

Wall Colmonoy Corp.:
Spraywelder for low oxyacetylene pressure, IE, 2/18, p.115
Spraywelder exhibited, IE, 4/15, p.137

Wallace Products Corp., B. E.:
Aluminum gantry, telescoping legs, IE, 2/11, p.190

Wallace Supplies Mfg. Co.:
Plunge cutting unit, IE, 5/20, p.112

Walworth Co.:
Moves to Calif. cut costs (Pacific time lag), 1/21, p.39

Wapakoneta Machine Co.:
Buys Calif. Saw, Knife & Grinding, 4/29, p.30

Warner & Swasey Co.:
Chucking automatic (4-AC) does heavy metal cutting, 5/27, p.149
Lathe using preset, quick change tooling, TO, 3/18, p.20

Washington Scientific Industries Inc.:
Jig borer, tapper, accuracy, cost fortes, IE, 6/3, p.115

Waterbury Farrel Foundry & Machine Co.:
Mill rolls strip up to 8 in. wide, IE, 5/20, p.113

Wean Mfg. Co. Inc.:
Stacker crane works storage area alone, 1/21, p.39

Webster Mfg. Inc.:
Buys Spinning & Stamping, B, 3/4, p.33

Wedgelock Corp.:
Pneumatic Speedrunner tool fastens sheet metal, IE, 1/7, p.314

Weirton Steel Div.:
Continuous casting unit installed, 5/20, p.33
Electrotin line revamped, 5/27, p.88
Resleeving saves worn plater rolls on electrolytic tin line, 3/11, p.62
Tin plate foil, new dev., 5/20, p.17

Wel-Fab Industries:
Pallet type box, folds fast, IE, 5/27, p.152

Weld Tooling Corp.:
Device burns, bevels holes, IE, 2/4, p.106
Magnets position burning, beveling unit, IE, 2/11, p.186

Wells & Sons Inc., W. F.:
Metal cutting bandsaw for culvert pipe, IE, 6/3, p.114

Wessendorff, Nelms & Co.:
Nelms: Distributors unique in economy, 1/14, p.86

Western Electric Co.:
Telephone electronic system operates in microseconds, 2/11, p.118
Thin film resistor circuits production, 4/22, p.33

Western Technology Inc.:
Chemical milling forms intricate shapes, IE, 1/14, p.103

Westinghouse Electric Corp.:
Amplifier circuits, solid state (cover), 4/29, p.40
Arcwelder designed for heavy work, IE, 6/24, p.138
ASTME progress award to Price, 5/6, p.27
Burnham addresses Westinghouse Forum, aims at key cost areas, 6/17, p.27
Buys Controls Div. of Hagan Chemicals, 4/29, p.29
Compact welder features silicon rectifiers, IE, 2/25, p.121
Cresap: Computer controlled rapid transit predictions, 1/7, p.20
Cresap: World market challenge, 3/4, p.106
Derderian addresses ASTME on overseas marketing, 5/20, p.28
Digital controls for hot strip mill, 4/29, p.18
Dip paints-light fixtures, Cleveland, 3/25, p.74
Insulation system for motors in high temps, 3/11, p.18
Laser machine, researchers report, 4/8, p.71
Lubricant-dry for space tests, 6/3, p.60
Lubricant-self, tougher, 4/1, p.20
Lubricant for superslippery family of materials, TO, 3/18, p.20
Mechanical speed reducers on shafts, flanges, IE, 4/29, p.103
MHD generator with superconducting magnet, 1/14, p.17
Permanent magnet, on-off feature (research lab), 2/18, p.66
Plasma beam, hotter than sun, 5/20, p.31
Portable lapping, polishing machine (Mazur), IE, 5/13, p.162
Radiometer measures laser beam energy, IE, 3/25, p.190
Salt water conversion process (vapor), 2/18, p.18
Semiautomatic welder, 200 amps, IE, 6/3, p.115
Sheet flatness measured, 1/14, p.20
Superconducting magnet system, IE, 4/8, p.116
Superconducting metal, strip-sheet form, IE, 2/25, p.114
Tantalum alloy (new) for high temp. work, 1/14, p.26
Twin magnet brake, IE, 5/13, p.161
Ultrasonic thermometer takes ocean temperatures, 4/15, p.18
Welder efficient on production work, IE, 5/20, p.117
Welders want automation, quality (Abel), 4/22, p.20

Westinghouse Machine Tool Electrification Forum:
Speakers, 6/17, pgs. 17, 18 and 27.

Wetmore Tool & Engineering Co.:
Buys Gun Drill Div., P&W, 6/24, p.35
Continuous buttweld pipe mill, Benwood, W. Va., modernized, 1/7, p.33; in operation, 3/4, p.76

Wheeling Steel Corp.:
Contracts for Steubenville, 5/20, p.33
Contracts for galvanizing line equipment, 3/18, p.35
Expansion and improvement contracts, B, 6/24, p.33
Kirkpatrick: Low inventories cushion economic downswing, 1/14, p.17
Kirkpatrick: You can't pinpoint steel price impact on cost of living, 4/22, p.26
Price increases, 4/15, p.28
Steele (AISI address) stresses manpower needs, 5/27, p.24
Vertical strip motion simplifies gage unit, Yorkville plant, 4/29, p.52

White Motor Co.:
Buys Motec, 1/28, p.32

White Sewing Machine Corp.:
Buys Jerguson Gage, B, 6/3, p.35

Whiting Corp.:
Tractor wheels, tracks and road, IE, 1/7, p.314

Whitney Mfg. Co., W. A.:
Hydraulic duplicating press, IE, 4/22, p.223
Hydraulic gang punch, IE, 1/21, p.94

Wiedemann Machine Co.:
Press positions and punches holes fast, IE, 5/6, p.153

Wiggin Works, Henry:
Punched cards operate press and manipulator, 1/14, p.39

Williams Bros. Co.:
Contract for laterial pipeline, 1/21, p.57

Willey's Carbide Tool Co.:
Insert shapes cost less, 6/24, p.81

Willys Motors Inc.:
Changes name to Kaiser Jeep, B, 4/22, p.35

Wilton Tool Mfg. Co.:
Buys Boice-Crane, B, 3/25, p.35

Winsco Instruments & Controls Co.:
Instrument records temperature two ways, IE, 5/6, p.142

Winsmith Inc.:
Worm gear motor series, IE, 5/6, p.140

Wintriss Controls: See Industrionics

Wisconsin Centrifugal Foundry Inc.:
Buys Waukesha Smelting, B, 6/3, p.35

Worcester Pressed Steel Co.:
How job shops should buy capital equipment, 4/1, p.44

Worthington Corp.:
Consolidated divisions at Harrison, B, 5/6, p.35
Mikulak: Welding estimate, semiautomatic vs manual electrodes, TO, 5/6, p.20

Wyman-Gordon Co.:
Buys interest in Reisner Metals, B, 1/14, p.28

XYZ

Xerox Corp.:
Aperture card making machine, IE, 5/20, p.113

Yale & Towne Mfg. Co.:
Lift truck attachment, IE, 5/13, p.164
Merger proposal with Eaton, 4/8, p.28
Pallet truck for variety of big jobs, IE, 2/18, p.118
Three transmissions offered for lift trucks, IE, 6/10, p.185

Yawata Iron & Steel Co.:
Way to recover gas from L-D converters, 1/7, p.166

Youngstown Research & Development Co.:
New Taylor rolling mill for thin tin, 4/15, p.17

Youngstown Sheet & Tube Co.:
Cold reduced sheet mill (80 in.) planned for Indiana Harbor Wks., 6/3, p.26
Expansions, Chicago area plants, 3/11, p.68
Fetters: Research facilities, new center, 3/11, p.31
Fetters: Drafting international standards, 2/25, p.28
Glossbrenner: How to prune cost of government, 4/29, p.17
Glossbrenner: No justification for wage or price hikes, 2/25, p.17
Mandatory retirement set, 2/4, p.48

Zagar Inc.:
Open side drill, IE, 4/22, p.220
Variable speed head drive added to drill, IE, 3/25, p.195

Zeiss Inc., Carl:
Masked microscope aids assembly of gyroscopes in dust exhaust hood, 5/13, p.84

Zenith Sales Corp.:
Miguel Jr.: Export of consumer goods restrictions, 3/11, p. 26

Zucon Inc.:
Formed, B, 5/27, p.33

STEEL

The Metalworking Weekly

EDITORIAL INDEX

VOLUME 153

July 1 to December 31, 1963

Subject Index 3
Company Index 13
Author Index 23

THE PENTON PUBLISHING COMPANY

Penton Building, Cleveland, Ohio 44113

SUBJECT INDEX

A

Abrasives:
How to find profit in abrasive machining, 9/16, p.126

Adhesives:
Adhesive assembled filters, 12/16, p.76
Adhesive holds carbide (wear plates bonded to steel die bodies), 12/2, p.19
Aircraft-Fairchild F-27, adhesive bonded joints instead of rivets, 12/30, p.29
Look what you can do with adhesives (article), 8/5, p.36

Aerospace:
AIA: Better teamwork needed between government-industry, 7/15, p.27
IAM-UAW propose study group, wage system and work hours, 10/14, p.46
Research center, Indiana Univ., experiments in technology, 12/23, p.27

Affluent Society: See Consumer Durables

Agriculture:
Mill scale waste turned into "Green Garde" for gardens, 9/9, p.64

Aircraft:
Aluminum sandwiches for 'instant' airfields, 12/16, p.78
Builders feel foreign competition, 7/29, p.29
Caravelle jet engine blades, ultrasonic tester, 7/22, p.51
DC-3 (small) need cited by Sen McIntyre, 9/23, p.18
Japan's Mitsubishi enters U. S. market, 8/12, p.160
Jets for executive or companies, 9/16, p.35
Scramjet, hypersonic ram engine for future, 9/9, p.20
Supersonic Transport, firms bid for contracts, 7/1, p.24
Supersonic Transport, NASA briefs contractors, 8/5, p.18
Supersonic transport (SST) dev., future predictions by FAA-Halaby, 7/29, p.29
Supersonic Transport, Mach 2.5, TWA president urges progress, 12/2, p.88
X-15 research plane, control panel improvements, 9/16, p.36

Air Force:
Procurement regulations tougher, 8/12, p.113
R&D laboratory units, Wright Patterson Base, Ohio, 9/9, p.29

Air Pollution:
Battle against smog continues, 7/29, p.131
Chicago tightens air pollution code (firms involved), 8/5, p.82
Chicago steelmakers map plan, 9/30, p.26
Ribicoff and others seek tax concessions for equipment, 12/16, p.27
SBA loans available, 9/30, p.26

Alexander Hamilton Institute:
Urban renewal study, 8/12, p.28

Alloys:
Alcoa's new high strength aluminum alloys (X7106 and X5180), 12/9, p.49
Almag 35 (aluminum-magnesium) developed by Reynolds, 8/5, p.56
Aluminum alloy (H-185) developed by Howe Sound, 12/30, p.24
Aluminum alloy (7039) new, for ultracold jobs, 8/26, p.31
Beryico Nickel 440, new 9/30, p.45
Beryllium alloy new, high strength-to-weight ratio, 8/19, p.17
Copper alloys for springs in new tempers, 8/5, p.56
Lockalloy, new space alloy vies with lightweight magnesium and beryllium, 9/2, p. 33
Magnesium-lithium, deep drawn with heated dies, 9/2, p.33
Nickel base alloy is age hardenable, contains beryllium and titanium, 11/11, p.62
Tantalum refractory alloy for hi temp use (new at GE), 12/16, p.29

Aluminum:
Alcoa's marketing policy may bring price stability, 11/25, p.45
Alcoa revision of commodity prices, 12/2, p.31
Aluminum industry outlook, 12/23, p.22
Aluminum producers raise prices to bolster profit margins (Alcoa, Kaiser, Reynolds earnings), 9/30, p.26
Aluminum price pressures continue into '64, 12/16, p.25
Aluminum coil annealing, Scovill, 11/4, p.97
Aluminum joint tests predict performance of structures (section of rapid transit car), 11/25, p.109
Aluminum makers woo manufactured home builders, 8/26, p.29
Aluminum pipe flaws located with electronic-radiation tech., 9/9, p.87
Aluminum sandwiches for 'instant' airfields (diecast aluminum cores-landing mats), 12/16, p.78
Aluminum shipments, 8/5, p.28
Aluminum shows everybody how (developmental marketing), 9/16, p.133

Aluminum Plants:
Consolidated Aluminum looms as tough competitor, dedicates reduction plant, 11/4, p.47
Nichols Wire, eddy currents test aluminum rod quality, 7/29, p.85
Phelps Dodge enters aluminum fabricating field, finances plant in Dutch Guiana, 12/2, p.33
Reynolds builds rod mill in Quebec, 11/18, p.33

American Die Casting Institute:
Diecasting sales predicted for '63, '64, 9/23, p.31

American Gas Assn.:
Steel pipelines, use declining, 9/9, p.28

American Gear Manufacturers Assn.:
Chicago meeting sums up trade mission to Europe, 11/4, p.43
Plastic gear committee formed, 11/11, p.31

American Institute of Mining, Metallurgical & Petroleum Engineers:
Hal Williams Hardinge award, 12/30, p.25

American Institute of Steel Construction:
Elections, Palmer president, 11/25, p.49

American Iron & Steel Institute:
Pettigrew is promotion co-ordinator, 8/19, p.28
Proposals for tariff negotiations, report to BDSA, 9/23, p.29

American Machine Tool Distributors Assn.:
Beggs address: Tool salesmen should provide better data, 10/21, p.44
Elects Walker, president, 10/21, p.44

American Marketing Assn.:
Cleveland conference-business forecast, solid growth, in '64, 9/23, p.28
Cleveland meeting, profit squeeze boosts machinery sales, 9/23, p.17
Johnson executive dir., B, 12/30, p.25
Lockhart resigns as exec. dir., 9/23, p.35

American Society of Body Engineers:
Preview of new products for body engineers, 11/18, p.113

American Society of Mechanical Engineers:
Conference highlights: Metalworking techniques, 9/16, p.49

American Society for Metals:
AMTEC show in Brussels (with ASTME), 12/2, p.118

Anodizing:
Anodized aluminum tests at Alcoa Lab, 12/30, p.34

Appliances:
Electrical industry plans promotional campaign '64, 11/11, p.28

Apprentices:
Apprentice program (BAT) enrollments lag, 11/18, p.26

Area Development:
Ohio development program finances new industry, gets aid from Ohio R&D group, 8/19, p.33
Urban renewal, AHI report, 8/12, p.28

Associated Industries of Cleveland:
Industrial Relations Conference: Functions of personnel managers? 10/14, p.43

Association of Iron & Steel Engineers:
Annual meeting: Industry suppliers agree on big year for steel, 9/30, p.30
Elects Michels president, other officers, 10/14, p.53
Profit squeeze, theme of sessions, 10/14, p.148

Astronautics: See Space Materials

Atomic Energy:
Articles (big new markets of 60s)
Exploding realm of the peaceful atom, 8/19, p.44
Tapping the potential of the peaceful atom (firms participating), 8/26, p. 48 and p.52
AEC Tremmel, industrial participation: How to tap the markets, 8/19, p.47
AEC operation plowshare (harnessing atom's explosive power for peaceful uses), 8/26, p.55
Atomic energy milestone (technology): First reactor obsolete, Oak Ridge, 10/21, p.120
Atomic generator for U. S. Coast Guard, unmanned lighthouse beacon, 12/9, p.117
Desalinization plants (fresh water from sea) could be new nuclear industry, 12/9, p.128
Isotope reactor (high flux) for Allis-Chalmers forge shop, 9/23, p.33

Australia:
Aluminum facility (correction) 'alumina', 8/26, p.104
Aussies want credit for USW victory, 7/22, p.28
Lures U. S. manufacturers, 8/19, p.27
Sheet lead process unveiled, 'DM' 8/26, p.103
Steel producer (Hamersley Iron Ltd.), 2nd in Australia, 8/12, p.29
Study atomic structure of metal surfaces, 7/1, p.24
Tidal power may boom electric output, 8/12, p.159

Automation:
Armco's new blast furnace is charged automatically, 12/9, p.108
Automation cuts 40,000 jobs weekly, USI executive charges, 10/14, p.44
Hand tool route to automation, 11/11 p.57
Harvester's automated engine line, 7/15, p.29
Integrated automation: It cuts new profit path for GE's information system, 8/12, p.90
Steel industry automation: Where do we go from here? (GE's W. E. Miller), 8/26, p.56

Automotive:
4-door sedans (chart): 1964 prices, dimensions, engines, 10/21, p.166
7 million sales every year? Age group buying rates, 7/8, p.93
1963 October car sales highest in history, 11/11, p.97
1964 equipment trends (accessories, options, engines), car buyers push coolers, buckets, belts, 7/15, p.81
1964 improvements, cars are better in little ways, 10/14, p.218
1964 (production chart) model run is underway, 8/12, p.151
1964 production schedules rev up, 10/21, p.165
1965 models taking shape, 9/9, p.119
1965 programs, how they shape up (GM-Ford changes), 12/30, p.59
Air conditioning upturn, 9/9, p.120
Air conditioning units-heat exchangers contoured to fit irregular spaces, 12/30, p.29
Air cylinder and valve redesign at Ford saves million in just one plant, 12/30, p.30
AMC's Abernethy: Compact trend is just starting, 9/30, p.75
Auto boom is worldwide (table), 8/12, p.28
Auto frame fatigue test (vibration), 9/16, p.149
Black light detects leaks, aids quality control, 12/30, p.25
Buick's stamped wheel eliminates covers, 9/23, p.82
Chevrolet's Knudsen forecasts 8.7 million car and truck sales, 9/2, p.109
Chrysler production programing targets million '64 cars, 8/26, p.95
Convertible market-sales, 8/19, p.90
Convertible tops have rear windows of bendable glass, 9/16, p.146
Designers preview new products for body engineers, 11/18, p.113
Dodge Charger, pic., 11/25, p.156
Electrical systems undergoing changes, 11/4, p.141
Engine trend forecasts, stratified charge powerplants, 12/9, p.158
Fastener (Velcro), strips of nylon tape, 11/18, p.114
Fasteners engineered at Chevrolet Motor Div., 11/25, p.155
Ford Div. targets record 4th quarter output: Iacocca reports $100 million anticorrosion program cuts warranty costs, 9/16, p.209
Ford, Wixom, Mich., plant: Electrocoating may bypass galvanized steel in auto bodies, 7/8, p.25
Ford's Allegro (experimental car), World Fair, 9/9, p.120
Ford's Cenko sees big surge in powder metal usage (transmission parts, etc.), 12/2, p.109
Fuel cell car predicted, 8/12, p.17
GM's "A" body design (compacts) may start trend: Cotter (Fisher Body) addresses SAE, 12/23, p.63
GM, how it maintains management depth (Jacoby reports), 7/1, p.65
GM how much decentralized? 10/28, p.77
GM, machine tool improvement areas, 8/5, p.81
Machine tool orders high, 12/2, p.25
Material needs (STEEL queries engineers at Ford), 7/22, p.85
Packaging pressures from Detroit, 8/19, p.89
Renault targets 10% of U. S. imports, 10/21, p.165
Rotary engine, AMC and Renault, 9/30, p.76
Rotary engine at Japanese Show, 12/30, p.60
Rotary engines, Wankel (German) and Renault, new in German sports car NSU Spider, 10/7, p.113

Rover Co. Ltd. (Britain) bolts body assemblies with unusual method, 12/9, p.157
Seat belts standard on '64 models, 9/9, p.120
Shock absorbers, Army tanks air/oil suspension system, 9/2, p.110
Smog battle continues, 7/29, p.131
South-African motor car, 7/22, p.94
Steering changes, tilt wheel, telescopic, 11/4, p.142
Stretch drawing, Cyril Bath tech., 7/22, p.43
Studebaker's revival fight lead by Egbert, 9/23, p.81
Studebaker quits, reasons, 12/16, p.111
Torsion bar seat (cold drawn bar stock), 11/18, p.113
Truck maintenance study, 8/19, p.90
Volkswagen spends $19 million in U. S. (raw materials, equipment), 10/14, p. 217
Volvo sales high, 8/26, p.96; 11/25, p.156
Volvo tests gas turbine, 9/16, p.216
Volvo (Sweden) builds in Belgium to avoid Common Market tariff, 12/9, p.158

Awards:
E-Flag award to Bliss and Thew Shovel, 12/2, p.118
Gray Iron Founders, design contest winner, 11/4, p.45
New Jersey Zinc diecasting awards, 9/2, p.31

B

Balance of Payments:
2nd half outlook, 7/29, p.17

Balancing Machine:
Automatic computor-controlled balancing machine (Renault), 9/9, p.87

Bank of America: See Leasing

Bargain Hunters: See Weldments

Bars:
Automated bar mill, Sweden, 12/9, p.166
Lomatic, new automatic bar processing machine, 10/7, p.33
Tungsten carbide boring bar (6 ft), 9/16, p.143

Battelle Memorial Institute:
Electron beam welding of tungsten report, 9/30, p.45
Tips on when to farm out our R&D, 8/26, p.27
Tungsten deposited from gas phase forms granules of high purity metal (Allied research program), 11/4, p.102

Bearings, Bushings:
Foreign made items must be marked (FTC), 7/22, p.30
Trend to tailored roller bearings, 8/5, p.29

Belgium:
Rolling mill at Liege, 9/30, p.84

Big New Markets: See STEEL Features

Biomachines:
Machines that mimic men, big new markets, 11/25, p.92

Bituminous Coal Research Inc.:
Coal injection unit dev., 8/5, p.48

Blanking: See Punching

Blast Furnaces: See Steelmaking

Blasting: See Cleaning, Blasting

Bonding:
Adhesive bonded joints in Fairchild F-27, turboprop transport, 12/30, p.29
Alfuse bonding of aluminum (heat exchangers for auto air conditioning units), 12/30, p.29
Plasma sprayed particles stick tightly, 12/30, p.15
Refractory fiber composites based on inorganic bonding, 11/25, p.47
Refractory metals, gas pressure bonding, 11/18, p.19
Solid phase bonding process for cladding copper with thick solder coat, 9/23, p.31
Teflon-aluminum laminate of continuous sheets produced by heat pressure bonding process, 9/2, p.31

Books, Booklets:
Canadian Trade Index, 8/19, p.118
Chemistry professor in plant maintenance, 9/2, p.138
Cryogenic engineering advances by Timmerhaus, 7/1, p.93
Digital computers, design and operation, 8/19, p.118
Encyclopedia of engineering materials and processes, 8/26, p.124
Hydraulic and pneumatic power for production, 7/15, p.117
Japan, stainless steel industry, 7/15, p.117
Steel castings, British and foreign specifications, 9/2, p.138
Transistor technology, 8/19, p.118

Boring:
Automatic jig borer ends scrap losses at Lear Siegler, 11/4, p.93

British Engineers Assn.:
Changes name, 7/1, p.74

British Iron & Steel Federation:
Studs on steel ingot tongs, report, 8/5, p.18

British Iron & Steel Research Assn.:
Making thin strip from powders, new electrophoretic deposition, 7/29, p.95
New burner used in experimental arc furnace has short, intense flame, 8/12, p.108
Oxy-fuel burners for steelmaking, 12/16, p.18
Polished sheet surfaces checked with optical device, 9/16, p.34
Television microscope measuring instrument, 12/16, p.90

British Steel Castings Research Assn.:
Shock waves remove cores from iron-steel castings, 9/16, p.153

British Welding Research Assn.:
Friction welds for wire, 9/9, p.19
Pulsed arcwelding, new tech., welds thin metals, 8/19, p.52

Buildings: See Construction

Business & Defense Services Adm.:
De Podwin: Ready for GATT talks, 10/21, p.43
Survey shows who buys numerical control, 11/25, p.43

Business Development Adm.:
BDSA name change, 8/12, p.18

Business (Economy):
1963-2nd half: Commerce conference speakers—Such, Block, Dr. Schmitt, 7/8, p.27
Automakers '64 plans could affect economy trend, 12/2, p.113
Business growth in year ahead (Prentice-Hall), 7/15, p.19
Chicago's business barometers, 12/30, p.24
Construction bolsters metalworking, 10/21, p.169
Marketing men predict solid growth in 1964, 9/23, p.28
NICB panelists forecast '64 upturn, 9/30, p.27
Why there'll be no runaway prices, 10/28, p.81

C

Cables:
Undersea coaxial telephone cables welded, 7/22 p.47

Canada:
Atlas Steels attacks U. S. special steels market, 10/7, p.88
GNP for '64: Threshold to boom? 12/9, p.45
Ontario Mfg. Opportunities Show: Exhibitors buying, not selling, 12/9, p.45
Steel complex planned along St. Lawrence River, 11/11, p.17

Cans, Canmaking:
1962 tin plate and aluminum can production, 9/16, p.51
Aluminum foil-paperboard can, quick opening top, 8/19, p.27
Composites catch on in booming can market, 11/18, p.78
Kaiser predicts 80% more aluminum in cans, 9/9, p.91

Capital Equipment: See Leasing

Capital Expenditures:
2nd half industry spending, Commerce-SEC survey, 9/16, p.49
3rd and 4th quarters, Commerce-SEC, 12/16, p.27
Construction-1964 outlook, private and public, 12/23, p.21
New plant and equipment, 3rd and 4th quarter spending estimated by Such, 7/8, p.27
New plant and equipment, 1965 forecast by Hooper (Westinghouse), 11/25, p.47
Railroad, '64 forecasts, 12/30, p.23
Steelmakers' capital spending climbs back, new plant and equipment, 9/2, p.25

Carbides: See Tools (Cutting)

Case Institute of Technology:
Forging research grant, 7/1, p.40

Casting, Castings:
1971 markets forecast by States, 9/9, p.28
Conticasting developments (firms), 8/19, p.31
Conticasting highlights, AISI, 9/30, p.27
Big slab caster (Demag) features ultralow platform, 8/19, p.31
Casting design awards, 11/4, p.45
Ceramic cores, method for refractory molds, 12/9, p.126
Continuous cast slabs, 100 in. wide by 17 inch thick (Concast), 8/19, p.31
Continuous cast slabs (Japanese firm), 10/14, p.148
Continuous cast wires, Porter facility, 8/5, p.31
Continuous casting computers (TRW-Concast), 12/9, p.46
Continuous casting plans, Armco, 11/18, p.93
Continuous casting plans, Copperweld, 8/19, p.33
Continuous casting (Russian method) may be brought here, by Luria Bros., 8/19, p.31
Continuous casting suppliers form company (MBC), 12/9, p.47
Investment castings made by Arwood, 11/11, p.31
Polyurethane tooling cast to shape, 7/15 p.60
Underwater shock waves remove cores from castings, reduce to powder (British), 8/19, p.97 and 9/16, p.153

Census:
1970 forecast, NEA on school groups, 10/28, p.40

Ceramics:
Ceramic fiber blanket carries tiny parts into furnace, 9/23, p.54
Ceramic tools win tough, new jobs, 11/4, p.88
Insulating ceramic (magnesium oxide) conducts heat, 10/21, p.115
Method of producing chemically removable ceramic cores, 12/9, p.26
Nucerite, ceramic composite extends thermocouple life, 12/9, p.124

Chicago:
CACI reports Chicago business activity, 12/30, p.23

China:
Red China, steel production failure, 10/21, p.173 and reported by Prof. Yuan-li Wu, 11/4, p.149
Red China boosts coal-electrical production, 8/5, p.17

Chlorine: See Deburring

Cladding:
Bonding process clads copper with thick solder coat, 9/23, p.31
Clad copper used in semiconductor parts, 9/2, p.29
Electrocladding shapes, new process, 10/7, p.18

Cleanrooms:
Machining liquid springs for space programs to half millionth surface finish, 7/8, p.58

Cleaning, Blasting:
Blast cleaner combines core knockout, 12/23, p.31

Coal:
Lab (Eastern Asso. Coal) gets Sharon Steel out of dilemma (mine shutdown), 10/21, p.121

Coal Injection: See Steelmaking

Coatings:
See Electroplating
See Finishes, Coatings

Chromium:
Gas alloying of steel with chromium gives coils stainless coat, 7/15, p.54

Communications:
Editorial: Never Good Enough, 11/18, p.15
Employee communications concerned with future leisure, 8/5, p.43

Company Operations:
A. O. Smith, Computer Div.: Charts corporation's future, 8/5, p.44
Bearings Co. of America: Approach to training unskilled workers to operate machine tools at new plant, 9/9, p.31
Cutler-Hammer: Part supplier's approach to systems (Fitzgerald, new president), 12/30, p.26
Ingersoll-Rand cuts costs: $200 million wasted yearly on fasteners, 10/28, p.48

Components:
3rd quarter survey, 8/5, p.28
4th quarter survey, 11/4, p.41

Composites:
Companies listed who make composite materials, 10/21, p.110
Composite solves cornerstone problem (Equitable Life Assurance building), 10/21, p.130
Composites catch on in booming can market, 11/18, p.78

Computers, Data Processing:
12 questions to answer in computer selection (conference speaker), 7/8, p.29
ADA (automatic data acquisition) links Lockheed divisions, 8/26, p.58
Air or hydraulic fluid powers computers, 9/2, p.80
A. O. Smith Corp.: How computer charts corporation's future, 8/5, p.44
Asarco's aluminum smelters . . . computer bares secrets of quality, metal alloying, 7/29, p.90
Foundry (Symington) IBM 1401 computer plots profit moves, 11/4, p.94
EDP (electronic data processing): Needed—EDP pioneers to prospect for gold in paperwork mountains (feature article), 12/16, p.70
EDS (Engineering Data System) cuts design manhours, used by Defense Information Searching, 11/25, p.106
DOD computer, thin film memory, 9/2, p.17
Ford charts (data processing) personnel skills, 10/7, p.33
GE's integrated business information system, Meter Dept., 8/12, p.90
GE medium computers (215, 225, 235) program machine tools, 9/23, p.31
GE computer (235) has auxiliary arithmetic unit, 9/16, p.146
GE transistorized computers aim at replacement market, 12/23, p.24
General Dynamics / Astronautics, shop production system, IBM 7074 and 1401 computers, 9/16, p.150
Grocery punch card method, France, 9/30, p.18
IBM's new communication control system (7740) transmits messages, 7/29, p.102
Mobil Oil data processing cuts cost leaks in maintenance, 11/4, p.98
Phone computers, Univac Data Line-Terminal, 11/11, p.74
RCA reveals 'all purpose' modular designed computer (four basic functions), 8/26, p.28
Renault-Cleon Wks., automatic balancing machine - computer, 9/9, p.87

Time study and cost analysis computer (Bell Telephone), 9/2, p.18
Time study, work measurement computer (Pittsburgh management consultant), MTM-GPD system, 10/21, p.47
See also Steel Mill Controls

Construction:
1963-1st half construction, an economic leader, 7/22, p.89
1964 forecast: Construction bolsters metalworking, 10/21, p.169
1964 forecasts, private and public, 12/23, p.21
Chicago's Civic Center, technique strengthens steel skeleton during hot days, no sagging, 9/9, p.18
Equitable Life Assurance Society building, composite solves cornerstone problem, 10/21, p.130

Consumer Credit:
Per capita consumer credit, Europe-U. S., 8/5, p.90

Consumer Durables:
Big new markets for the '60s: Items for the affluent, 12/9, p.100

Consumer Spending:
1960-2000: How the consumer will spend his money (new markets), 9/9, p.56
Can consumers keep it up in 2nd half? 7/15, p.85

Conveyor Equipment Manufacturers Assn.:
Meeting report, sales outlook, 10/14, p.47
Elections, B, 11/4, p.51

Coolant: See Lubricants

Copper:
Clad copper (new) used in semiconductor parts, 9/2, p.29
Copper clad with thick solder coat, 9/23, p.31
Copper in stainless eases deep drawing (door knobs), 10/28, p.52
Hot dipped copper coat on steel, 7/29, p.98

Copper Development Assn. Inc.:
Assumes duties of CBRA, 8/12, p.35

Cornell University:
Study: Mathematical theory of plastic behavior of structural shells under pressure, 11/25, p.116

Corrosion:
Hot dipped copper coat protects steel, 7/29, p.98
Resin coating for steel heat exchangers, 7/22, p.56
Rustproofing with Parkerizing 100, 11/25, p.97
Space corrosion test (cesium vapor on refractory metals), 8/12, p.18
Zirconium used in pump and valve components, anti-corrosive, 10/7, p.85

Cost Cutting:
Explosive forming, tube bending, chem milling combined to save $1276, 9/29, p.88
Ingersoll - Rand: $200 million wasted yearly on fasteners, 10/28, p.48
Norton: How to find profit in abrasive machining, 9/16, p.126

Council for International Progress in Management:
Conference emphasizes global need of U. S. management knowhow, 9/23, p.25

Crushing:
New equipment blasts carbides into powder (for reuse), 9/2, p.70

Cryogenics:
Aluminum alloy passes cryogenic tests, 8/26, p.31
British firm offers cryogenic steels for storage vessels (Cryomet 9 and 10), 9/9, p.29
Cryogenic process hikes tool life, 11/4, p.47
Cryogenic rail car (big vacuum bottle) Germany, 8/12, p.159
Invar, alloy used in cryogenic systems (rod permits crackfree welding without preheating), 11/4, p.105

Cuba:
Russia aids in building steel facility, 12/2, p.117

Customer Service:
Aluminum Extrusion's design seminar, 8/12, p.109
Goal: More technical sales power method, fill the information gap, 11/18, p.73

Cutting Oils: See Lubricants

Cutting, Shearing:
Freezing metals speeds cutting rate (Douglas), 1/11, p.31
Shear feeding system at warehouse, 9/30, p.45

Cutting Tool Manufacturers Assn.:
Chicago regional meeting, producers hit tariff cut talk (Beloit's Taylor), 7/8, p.29

Cutting Tools: See Tools (Cutting)

D

Data Processing: See Computers

Deburring:
Chlorine deburring opens new field, 11/4, p.115

Defense:
Antisub warfare, Navy funds, 7/15, p.27
Budget slash for '64 recommended by House Appropriations Committee, projects included, 7/1, p.23
Cost cutting procedures, economy drive by President Johnson and McNamara, 12/9, p.43
Cost cutting also realized via reductions in procurement and research, 12/16, p.28
Defense R&D outlays to climb, 7/15, p.27

Defense Contracts:
Air Force policy reported by Gen. Keeling, 8/12, p.113
Commerce publication lists contract opportunities, 9/30, p.29
Cuneo (lawyer): Know the pitfalls of government contracts, 12/9, p.49
McNamara lists guidelines for cost cutting (letters to contractors), 12/9, p.43
SBA gets more, 8/19, p.66
States (4) lead in contract awards, 7/1, p.14
Supersonic transport jets, firms seek, 7/1, p.24

Defense Marketing:
Tips for effective defense marketing (RCA's Hertzberg), 7/15, p.25

Degassing: See Vacuum

Deliveries: See Orders

Depreciation:
Depreciation guidelines sliced $2.4 billion off industry's taxable income (tax credit), 8/19, p.25

Design:
Breakthrough in plastic design aim of Cornell studies, 11/25, p.116
Rubber goods, cost of poor design, 7/8, p.60

Developmental Marketing: See Marketing

Diecasting:
1963-1964 sales records predicted by ADCI, 9/23, p.31
Aluminum diecast waffle mats for 'instant' aircraft landing fields, 12/16, p.78
GM to use gas fired preheaters, 7/8, p.94
New Jersey Zinc diecasting awards, 9/2, p.31

Dies: See Tools & Dies

Distributors:
Alcoa's basic policy change in distribution (marketing move may bring price stability), 11/25, p.45
Industrial distributors join Fair Trade proponents (competitive products-trademarked may set prices), 9/9, p.27

Diversification:
American Can research lab studies diverse markets, 8/12, p.31
Hamilton Watch, commercial heat treating section, 7/15, p.56
Pneumo-Dynamics buys machine tool builder (Cone Automatic), 7/29, p.31

Drawing:
Aluminum dimpling problems solved, 7/22, p.52
Copper in stainless eases deep drawing (door knobs), 10/28, p.52
Stretch drawing for automakers, 7/22, p.43

Drilling:
Automatic jig borer ends scrap losses (Fosmatic), 11/4, p.93
Fastener drills and taps its own hole at Shakeproof, 10/7, p.76

Drop Forging Assn.:
Tichenor president, meeting report, 7/1, p.41
Appointments, 9/23, p.35
Sales forecast at winter meeting, 11/25, p.45

E

Earnings: See Financial

Eddy Currents: See Inspection

Editorials:
$10 Billion More (metalworking sales), 11/25, p.31
A Free Engineering Code! 12/2, p.15
Boon or Bane? (steel contract, 13 weeks vacation), 7/8, p.15
Buggy Whips for Missiles (unproductive jobs), 7/29, p.15
Churning Change (metalworking-metals), 10/28, p.15
Communications: Never Good Enough, 11/18, p.15
Dial for Manners (phoning), 12/30, p.11
Don't Sell Us Short (metalworking sales), 8/12, p.15
Engineering (free): Let's educate, 8/5, p.15
Emotional Factor No. 1 (late deliveries), 8/19, p.15
Facilities Fitness (depreciation guidelines), 8/26, p.15
How's Business? 9/16, p.31
Keep Pace with Change! 10/7, p.15
Know Thy Competition (technological changes), 11/11, p.15
New Era in Labor (labor-management relations), 7/1, p.11
No 'Free' Systems! (free engineering), 11/4, p.31
Pricing Courage, 12/23, p.11
Prophet of Profits, 7/15, p.15
Selling On the Pinch (profit squeeze), 9/30, p.15
Skilled Help Wanted, 12/9, p.31
Skills for Minorities, 12/16, p.15
The Answer Book (Commerce Dept. statistical abstract), 9/23, p.15
The Market's Function, 10/14, p.31
The Materials Marriage, 10/21, p.31
The Problem in 1964 (product-market changes), 9/2, p.15
Tools for Freedom (foreign exchange students), 7/22, p.15
Wanted: Entrepreneurs, 9/9, p.15

Education:
Audiovisual devices: Machines that teach graduating to profits, 10/28, p.41
Rising knowhow in other nations threat to U. S. (higher percentage of college grads), 11/4, p.44
Sarnoff (RCA) urges integration of science-humanities in educational system, 12/16, p.29

Egypt:
Aswan High Dam project may save historic temples on the Nile, 9/23, p.89

Electric Power:
MHD generator, pioneers in search for power, 8/12, p.87

Electrical Equipment:
NEMA predicts sales, 10/28, p.28 and 11/11, p.28

Electrodes:
Sparkplug electrodes: Power plus extrusion extends life, 12/16, p.82

Electrolysis:
Dissimilar metal joining, electrolytic tech., 12/2, p.18

Electrolytic: See Machining

Electron Beam:
Electron beam drills tiny holes, 8/5, p.58
Temescal plans electron beam steel pilot plant (melting of conventional steels), 8/26, p.33

Electronic Data Processing:
See Computers, Data Processing

Electronics:
Executive suggests way to cut R&D overlap, 9/9, p.28
Forecast: Sales to double in 6 years, 9/2, p.28
Military use for molecular electronics by 1970-estimated, 7/8, p.18
Quantitative Television Microscope (electronic method for making determinations under microscope), 12/16, p.90
RCA-Sarnoff pictures science of tomorrow (integrate sciences with humanities), 12/16, p.29

Electronics Industry Association:
Electronic sales at factory level, 12/9, p.33

Electrostatic Coating:
Ford may use for auto bodies at Wixom plant, used in England, too, 7/8, p.25 and 27
BISRA continues interest, 7/29, p.95

Electroplating, Plating:
Flow plating mismachined part, 12/9, p.107
Gold plating process (Lockspray) licensed, 7/22, p.29
Lockheed unveils new metal plating process (nickel), 8/12, p.112
New noncyanide barrel zinc plating process, 12/23, p.23

Employees:
See Communications
See Training

Employment, Unemployment:
1964 employment growth patterns, 12/16, p.115
Average employment with same employee, 8/26, p.17
Steel hourly worker costs, June, 8/12, p.29
Unemployment figures, Mid-July, 8/12, p.30

Engineering: See Free Engineering

Engineers, Technicians:
People Renting service, 11/11, p.27
Salaries of Lehigh grads, 7/8, p.17
Salaries up compared with '60, 7/22, p.28
Wanted: 'Interdisciplinarian' engineer, 7/22, p.28
Women: New look for engineering, 11/4, p.44

Entrepreneur:
The rebirth of the entrepreneur, developmental marketing, 9/9, p.49

Europe:
EEC: Where 50 biggest companies are, 8/19, p.97
Executive pay rising, 11/4, p.43

Exothermics:
Exothermics: Pot boils with new ideas, 8/26, p.60

Exotic Metals: See Space Materials

Expansions: See Plant Expansion

Explosives: See Forming, Bending

Exporters:
Outlook for U. S. exports (Commerce Dept.) Changes in 1st half 1962 vs 1963, 10/21, p.41

Exports, Imports: See Foreign Trade

Extraction:
Oxygen extracted from rocks for rocket propellents (moon materials), 11/11, p.72

Extrusion:
Dynapak bangs out thin wall extrusions at Westinghouse, 11/11, p.73
Powder plus extrusion equals duplex electrode (sparkplugs), 12/16, p.82
Steel extrusions competitive with rolled sections in low tonnage applications, 9/30, p.31

F

Fabrication & Assembly:
Automatic machine used in fabricating hard to handle truck axle assemblies, 7/29, p.92
Pull type rivets ease, speed light assembly, 8/19, p.63
Rover Co. Ltd. bolts auto body assemblies with unusual method, 12/9, p. 157

Fasteners, Fastening:
$200 million wasted yearly on fasteners (Ingersoll-Rand cuts costs), 10/28, p.48
Automatic screw feeding-driving unit, 8/19, p.54
Fastener drills, taps its own hole, fastens in one operation (Shakeproof), 10/7, p.76
Fasteners are engineered at Chevrolet Motor Div., 11/25, p.155
Pull type rivets ease, speed light assembly, 8/19, p.63
Riveting suggestions for vinyl-metal laminates (stereo record player cabinets), 12/16, p.81
Rover Co. Ltd. bolts auto bodies with unusual assembly method, 12/9, p.157
Zip strip device joins panels, doors, 9/2, p.19

Fatigue Behavior: See Structurals

Fibers:
Glass fibers with tensile strength for rocket cases, 11/18, p.92
Jobs for fiber optics (illumination, inspection, meter limit switch, area estimators), 7/8, p.65

Filters:
Perforated stainless cuts clogging, improves filter, 8/26, p.59

Financial:
Cash flow by U. S. corporations, retained earnings, 9/16, p.34
Metalworking profits, 1st half (66 firms), 8/12, p.27
Metalworking profits, 1st half, SEC analysis, 9/30, p.25
Metalworking profits and sales, 1st nine mos. (60 firms), 11/11, p.25
Metalworking sales estimated, 11/25, p.86
Personal income record, 8/5, p.85
Steel earnings, 2nd quarter, 8/5, p.29
Steel, 3rd quarter earnings, comparisons, 11/4, p.42

Financing:
Coming: Changes in equipment financing (banks new programs), 8/12, p.25
See also Leasing

Finishes, Coatings, Paints:
Antioxidation coat for TD nickel (Chromalloy Corp.), 10/28, p.30
Ceramic metal coating for ferrous alloys goes on like paint, 11/18, p.31
Clad copper with thick solder coat, 9/23, p.31
Clad copper for semiconductor parts, 9/2, p.29
Coil gets stainless coat (by gas alloying steel with chromium), 7/15, p.54
Coil coaters (auto, appliance, packaging markets), 11/4, p.45
Composite coating for foundry molds (English firm), 10/28, p.29
Copper coat (hot dipped) on steel, rust preventive (McQuaid report), 7/29, p.98
Copper coating for outdoor environments (INCRA), 11/18, p.31
Electrocoating auto bodies at Ford, 7/8, p.25
Electrocladding shapes, new process, 10/7, p.18
Electrostatic fluid bed system for dry powder finishing by French electronics firm, SAMES, 8/12, p.105
Gold spray plating process (Lockspray), 7/22, p.29
Phosphatizing, rust proofing with Parkerizing 100, 11/25, p.97
Plasma spray (molybdenum powder with improved flow rates), 10/21, p.117
Plastic coat for fuel oil tubing-pipe, 12/2, p.85
Precoated steel gains favor in many areas, 11/19, p.83
Resin coating protects steel heat exchangers 7/22, p.56
Spray-up line for Fiberglas panels, 10/14, p49
Ultrathin enameling coat on Teflon insulated wire, 10/21, p.121

Flux:
Fluxing materials-conyevor belts at U. S. Steel's oxygen plant, Duquesne, 12/9, p.122

Food Services:
Vender machines, uses, 11/11, p.51

Foreign Competition:
Planebuilders feel foreign competition, 7/29, p.29

Foreign Groups:
Foreign managers to study in U. S. colleges, attend CIPM, 7/22, p.61

Foreign Investments:
Foxboro expands international network, 8/5, p.31
Overseas investment outpaces domestic (McKinsey study), 11/25, p.45
U. S. expenditures leveling off (chart — where manufacturing firms invest abroad), 11/11, p.29
Value of U. S. direct investments abroad, 10/21, p.173

Foreign Markets:
African-European team opens new markets, 7/29, p.139
Australia, 5 lures to U. S. manufacturers, 8/19, p.27
Austria, growing market for U. S. goods, 12/23 p.70
German steel (Solmssen - consultant) reports industry, 8/12, p.99
India lists investment priorities (metalworking industries), 12/2, p.117
India seeks foundries and forgers, 7/22, p.93
Ireland (Northern) seeks metalworking investments, 7/1, p.73
Italy, farm machinery sales, 8/19, p.97
Italy, important shifts coming in capital spending and production (chart), 11/18, p.28
Russia, will wheat deal spur trade? 10/21, p.42
Singapore seeks new industry, 7/29, p.139
South America — four countries market heavy electrical generating equipment, 7/29, p.139

Foreign Trade:
Commerce Dept. S.I.C. codes (getting U. S. firms to sell overseas), 9/2, p.28
Commerce Dept. trade mission reports on Belgium, Norway, Denmark at Cleveland session, 9/23, p.89
Cutting tool producers hit tariff cut talk, 7/8, p.29
Exporter (Chamberlain) tells how you can succeed in foreign markets, 11/18, p.67
Exports direct and indirect, and imports of steel (trade balance), chart, 9/23, p.29
Export tax relief and fewer anti-trust restrictions on joint overseas ventures considered by Kennedy administration, 9/23, p.29
Exports: Executives meet with President and cabinet members, proposals, 10/7, p.121
Export outlook for U. S., countries (Commerce Dept.), 10/21, p.41
Free world return to nationalism (Watson-IBM addresses foreign trade convention), 11/18, p.43
GATT negotiations, official prepared for talks (BDSA's De Podwin), 10/21, p.43
Instrument firm battles imports, 7/1, p.25
Nuclear test ban treaty may mean more trade with Red Bloc, 9/23, p.28
Overseas licensing boosts domestic business, 8/26, p.103
Polished sheet tariff increase, 8/5, p.19
Steel export subsidies proposed by Janeway (economist), 12/30, p.22
Steel imports, 1st half (table), 9/16, p.50
Steel tariff negotiations, AISI views reported to BDSA, 9/23, p.29
Texas market may be reopened to steel importers (highway construction), 11/18, p.28
Wheat deal to spur trade with Reds? 10/21, p.42

Forging, Forgings:
Dual fuel furnaces for forging billets, 8/26, p.29
Forgers push hard for comeback (sales up), 7/1, p.41

Forming, Bending:
Axial bulge forming slims Boeing's costs, 12/9, p.99
Czechs' explosive forming press, 12/16, p.119
Dynapak explosive extrusions at Westinghouse, thin wall sections, 11/11, p.73
Explosive forming, tube bending, chem milling process cuts costs at General Dynamics/Astronautics (missile fuel lines for Olive Oyl and Steel Horn), 7/29, p.88
Floturn-shear spinning long missile fuel tubes, 12/9, p.47
Stretch drawing for automakers (Cyril Bath process), 7/22, p.43

Foundries:
Association resists USW vacation plan, 11/18, p.29
Composite coating for metal foundry molds (dev. by English firm), flame sprayed, 10/28, p.29
Gra-Iron Foundry: Blast cleaner combines core knockout, 12/23, p.31
Investment castings, joint benefits in value analysis (user and foundry), 9/9, p.91
MFS: Malleable castings head toward million ton mark, 10/28, p.28
Mobile ladle transports molten aluminum to furnaces, 11/11, p.75
Moldbiomatic, new mold-blow-squeeze unit, 9/16, p.168
National Cash Register: Gray iron and ductile iron melted in induction furnaces, 10/28, p.54
Symington Div.: Computer plots foundry profit moves, 11/4, p.94
Wagner Casting: New specialty foundry in Illinois (leases equipment), 7/29 p.33

Foundry Equipment Manufacturers Assn.:
Elect president, others, 10/28, p.31

Free Engineering:
A Free Engineering Code? (editorial), 12/2, p.15
Engineering: Let's Educate (editorial), 8/5, p.15
No Free Systems (editorial), 11/4, p.31

Fuel Cells:
50 watt fuel cell to be tested in orbit, 10/21, p.126
Search for new power, firms involved, 8/12, p.83 and fuel cell timetable, p.86
Fuel cell developments, 9/16, p.36
Unit converts natural gas and air into electricity (typewriter size), developer Dr. Schultz, 10/28, p.28

Fuel Tube Sections:
See Space Materials

Furnaces, Ovens (Heating, Heat Treating):
Burner used in experimental arc furnace has short, intense flame (BISRA), 8/12, p.108
Controlled atmosphere annealing furnace (alloy steel bars) at Republic, 11/25, p.100
Controlled atmosphere, shuffle hearth furnace on skids, 12/16, p.88
Cooled roofs (hybrid furnace) may save steelmen buck a ton (combines oxygen with openhearth practice), 12/9, p.97
Dual fuel furnaces best for forging billets (British firm), 8/26, p.29
Electron beam steel melting pilot plant (Temescal), 8/26, p.33
Induction furnaces installed in foundry at Nat'l Cash Register, 10/28, p.54
Pressurized laboratory heating furnace, 6500° F, 12/23 p.23
Stora-rotary furnace replaces conventional blast furnace in producing pig iron directly from iron ore, 11/11, p.59
See also Oxygen Furnaces
See also Vacuum Furnaces

G

Gages: See Inspection, Testing

Galvanizing:
Australian firm claims new sheet galvanizing tech., 12/9, p.129
Ford electrocoating may bypass galvanized steel for auto bodies, 7/8, p.25
Wheeling Steel galvanizing line allows many variations (Cooke-Norteman process, flux cleaning), 12/30, p.35

Garden Supplies:
Market grows, 8/19, p.18

Gas Alloying:
Gas alloying gives coils stainless coat, 7/15, p.54

GATT: See Foreign Trade

Gearmakers:
Trade mission to Europe, summing up, 11/4, p.43
Switch to leaded steels, 9/9, p.89

Germany:
ATH-integrated steel plant near completion, 9/30, p.84
German steel, its problems sound familiar (annual reports of companies): Harold Solmssen, Consultant with Rundt & Associates, 8/12, p.99
Hanover Fair report, 7/1, p.74
Shorter workweek arguments, 11/18, p.122
Thyssen Steel Group, steel production 1962-63, 12/16, p.120

Government:
Atomic power program, 8/19, p.45
Automation Commission established, 7/29, p.17
Commerce Dept., civilian technology program needs aid, 11/4, p.116
Defense cost cutting (Johnson and McNamara), 12/9, p.43 and 12/16, p.28
Export tax relief and fewer anti-trust restrictions on joint overseas ventures under study, 9/23, p.29
Exports: Executives meet with JFK, proposals, 10/7 p.121
Fair Trade "quality stabilization" legislation may aid distributors (price set on tradenamed, competitive products), 9/9, p.27
Federal research under study, 9/23, p.18
Grand jury subpoenas steelmakers, request data on pricing practices, 10/28, p.26
Labor panel (NLMP), 1st meeting report, 7/29, p.27
Labor law changes, pressures for Congressional action mount, 9/16 p.47
Oceanographic bill passes House, 9/16, p.34
Patent hassle despite JFK memo, 10/21, p.44
R&D Programs: See Research & Development
Roosevelt (James) hearings, steelmakers dual distribution—integrated mills competing with customers, 9/2, p.29
Trade Act adjustment, Tariff Commission (AFL-CIO against), 9/9, p.27

Walsh-Healey:
Instrument makers redetermined minimum wage, 7/1, p.15
Machine tool builders (11) join others in test case, 7/8, p.28
Machine tool builders win 1st round in challenge (11 plaintiffs named), 7/22, p.25
Machine tool case reaches Court stage, 8/5, p.27
Machine tool industry wins case, two minimum wage rates ruled illegal, 12/16, p.28
Motor and generator industry rates, 7/8, p.28 and 7/22, p.25
See also Defense Contracts

Graphite:
Graphite aids continuous casting, 9/16, p.34

Gray Iron Founders' Society:
Appoints Dahlberg asst. tech. dir., 11/25, p.51
Design contest winners, 11/4, p.45
Elects, B, 11/11, p.35
Hammer, marketing dir., B, 8/12, p.35

Great Britain:
Mobile schools (pictures), 8/19, p.98
See also British Iron & Steel Research Assn.

Grinding, Polishing:
Aerospace contractor (Schaffer Grinding) buys huge rotary table surface grinder, 7/8, p.72
Controlled Force grinding (Heald): Control of wheel-head feed force aids precision grinding of bearings, and bushings, 9/30, p.42
Nylon type abrasive wheels end finishing problems, 7/22, p.53

Gross National Product:
Marketing men predict 1964 GNP, 9/23, p.28
STEEL's Panel predict '64 metalworking-GNP, 10/7, p.25

Guns:
Black oxide solves discoloring on chokes for shotguns, 9/16, p.150

H

Heat Exchangers:
Aluminum heat exchangers contoured to fit space (auto air conditioning units), 12/30, p.29
CO_2 welding of heat exchangers for home furnaces, 11/25, p.103
Resin coat for steel heat exchangers, 7/22, p.56

Heat Treating & Annealing:
Aluminum annealing better 3 ways (Scovill), 11/4, p.97
Combined induction - fuel fired heating speeds strip annealing, 10/28, p.54
Equipment, skill wider market area (Hamilton Watch), 7/15, p.56
Exothermic annealing, new ideas, 8/26, p.60
Exotic metals (rhenium wire) for space age use, challenge to heat treaters 12/9, p.115
Gas alloying (Alphatizing process) gives coils stainless coat (diffused chromium), 7/15, p.54
Open coil annealing report, AISI sessions, 10/14, p.151

Honeycombs:
Aluminum - to - aluminum panels vacuum brazed, 10/14, p.34
Explosive forming, Martin Co., 9/23, p.18

Housing:
Aluminum producers woo manufactured home market, 8/26, p.29
Mobile homes, materials competitive, 9/16, p.53
Prefabs oriental style—Japan, also prefabs in Europe, 8/12, p.160
Steel industry ready for home market (galvanized siding), 10/7, p.28

Humanities: See Education

Hydraulics:
Air or hydraulic fluid powers computers, 9/2, p.80
Air-oil suspension system for tanks, etc., Army, 9/2, p.110
For hydraulics, space is lucrative new market, 7/15, p.53

Hydrogen:
Purification system recovers hydrogen, 8/12, p.108

I

IIT Research Institute:
Chlorine deburring: Harry Schwartzbart, 11/4, p.115
Fiber reinforced seals, TO, 12/30, p.16

Income: See Financial

India:
Japanese contracts increase, 8/5, p.90
Lists investment priorities for U. S. metalworking investors, 12/2, p.117
Indian trade center pushed by officials, 7/15, p.89
Seeks foundries and forgers, 7/22, p.93

Indiana University:
Scholarships for labor leaders, 8/5, p.18

Indirect Workers: See Productivity

Induction Heating:
Induction stirring aids in vacuum degassing, 7/8, p.66
National Cash Register foundry changes to induction furnaces, 10/28, p.54

Industrial Heating Equipment Assn.:
Annual meeting: Hooper (Westinghouse) forecasts 1965 equipment buying, 11/25, p.47

Industrial Relations:
Personnel managers functions? Powell speaks before conference, 10/14, p.43

In-Plant:
In-plant coding zips mail, stock sorting potential, 9/2, p.67

Inspection, Testing:
Aluminum joint tests predict structure performance (rapid transit cars), 11/25, p.109
Aluminum pipe flaws located with electronic and radiation tech., 9/9, p.87
Balance meter problems solved with stainless flex tubing, 7/22, p.54
CEBM, four-way tester checks Polaris cases, 9/2, p.77
Eddy currents test tubing, 12/9, p.35
Eddy currents test aluminum rod quality, 7/29, p.85
Fluorescent and ultraviolet test inside of tubes, 7/29, p.87
Gage measures thickness of Polaris liner, 7/8 p.29
Gage (Slim Jim Precisionaire) checks reject rate of chaser blanks, 7/8, p.65
Leitz (W. Germany) has instrument to test molten metals, 11/18, p.29
Metal inspection device, "Sonicon," 9/16, p.33
Portable inspection equipment used on Caravelle jet engine blades, 7/22, p.51
Radiometric gage used in steelmaking, Russia, 8/26, p.29
Russia-U. S., pressure measurement techniques, 11/25 p.112
Scanning electron microscope developed by Westinghouse, 9/30, p.30
Television microscope mechanizes measuring (England), 12/16, p.90
Vibration tester uncovers fatigue factors (auto frames), 9/16, p.149
See also Ultrasonics

Instrument Society of America:
Automation conference, sales outlook, 9/16, p.50

Instruments:
Import market sighted by Brogan of Kollmorgen Corp., 7/1, p.25

Insulations:
Elastomeric materials for rocket motors, 12/16, p.33
GE's new material (mica mat), flame fighter, 12/9, p.124
Graphite felt for furnace insulation, 12/16, p.77
Insulating ceramic conducts heat (magnesium oxide), 10/21, p.115

International Copper Research Assn.:
Develops smog unit catalyst, 7/29, p.132

Inventories:
Components, 3rd quarter, 8/5, p.28
Components, 4th quarter, 11/4, p.41
Steel mill products, 3rd quarter, 9/9, p.25
Steel mill products, 4th quarter, 12/2, p.27

Investment Casting Institute:
Elects, B, 12/16, p.35

Ireland:
Northern Ireland seeks metalworking investments (pic-Belfast shipyard), 7/1, p.73

Iron Ore:
Japan to get iron ore pellets from Kaiser, 12/9, p.44
See also Pelletizing

Italy:
1962 industrial production, 8/5, p.89
Shifts in capital spending and production, forecasts (chart), 11/18, p.28

J

Japan:
Bearing exports (conference report), 9/2, p.28
Catamaran passenger ships, 10/28, p.85
College graduates nearly 100% of supervisory management, 11/4, p.44
Daido Steel Co.: Welding tech. CO_2—O_2 mixture at 4:1, 12/23, p.33
Dusseldorf, Germany trade center planned, 12/9, p.166
Fuji Iron & Steel: Automated weighing, 7/22, p.51
Fuji Iron & Steel (Hirase): Steel workers hours, labor costs, productivity, 10/7, p.29
Fuji Iron & Steel: Three bells aid operation at high top pressure (blast furnace), 12/2, p.81
Imports from U. S. (categories), 9/2, p.117
Instrument group bid for U. S. market, 10/14, p.225
Kawasaki Steel: Automation advances at slabbing mill, 9/9, p.93
Merger may mean Mitsubishi giant, 9/2, p.118
Nippon Kokan elects president and chairman 12/16, p.120
Nippon Kokan produces 1st machine tool-vertical lathe, 12/23, p.71
Rotary engines for passenger cars displayed at Show, 12/30, p.60
Showa Kawneer, new firm markets architectural metal products, 9/9, p.128
Steel capital spending cut (MITI ruling), 7/22, p.30
Steel exports, high, 9/2, p.117
Steel industry gets iron ore pellets from Kaiser, 12/9, p.44
Tokai Iron & Steel: Continuous strip mill opens, 9/9 p.127
Toyo Kogyo to try rotary engine, 7/1, p.16
Yawata Iron & Steel, new steel (WEL-TEN 100N), 7/15, p.31
Yawata Iron & Steel, continuous casting slabs (Dr. Saigo reports at AISE meeting), 10/14, p.148

Jig Borer:
Automatic jig borer (Fosmatic N/C) ends scrap losses at Lear Siegler, 11/4, p.93
Arcspot fastens locator brackets on jigs and fixtures (AF Starlifter cargo plane), 12/9, p.117
Two station work fixture mated to N/C turret drill, 12/16, p.76

Jobs:
Automation cuts 40 000 jobs weekly, USI executive charges, 10/14, p.44
How many new jobs created in 13 week vacation plans? 8/5, p.25
Job creation-markets: Wanted, entrepreneurs, 9/9, p.49

K

Kaiser Progress Sharing: See Labor-Management

L

L-D Oxygen: See Steelmaking

Labor:
AFL-CIO readies for short workweek legislation, 11/18, p.27
Alcoa salaried workers get vacation benefits, 9/2, p.27
Aluminum: Next vacation plan target, 7/1, p.19
Aluminum talks, 7/22, p.27
Aluminum vacation plan, 8/5, p.23
Antiproductivity edict given Universal-Cyclops employees, 8/19, p.28
Compulsory arbitration for rail strike (nobody wanted) but—, 7/22, p.26
Congressional action on labor laws, pressures mount, 9/16, p.47
Foundries resist USW vacation plan, 11/18, p.29
Indirect labor, cost challenge, 7/15, p.28
IAM - UAW propose aerospace study group (wage system), 10/14, p.46
IBEW seeks shorter workweek from Westinghouse, GE, 7/8, p.17
IUE Carey-Hartnett feud renewed, 10/14, p.34
IUE-GE bargaining, 8/5, p.26
IUE-GE, arbitration section of new contract, 10/7, p.27
IUE: GE, Westinghouse readying contract offers, 8/26, p.27
IUE-Westinghouse, seniority issue, 10/28, p.28
Labor leaders get scholarships at Indiana Univ., 8/5, p.18
Railroad strike outlook, 7/22, p.26
Strike idleness at postwar low, 11/25, p.33
UAW officers ousted at polls, 8/5, p.27
UAW prepares for 1964 bargaining (skilled workers), 8/5, p.27
UAW wins at Burroughs, door campaigning, 9/30, p.17
UAW: How hard a push for profit sharing? 11/25, p.41
USW: Inside closed doors of wage policy committee session (McDonald), 7/1 p.21
USW-steel pact, industry weighs pros, cons, 7/1, p.19
USW-steel settlement (contract length, vacation plan and costs, insurance, etc.), 7/1, p.23
USW - Bliss, vacation features, 10/7, p.28
USW-Erie Forge pact, 10/21, p.47
USW - B - L - H Standard Steel, tailored early retirement-vacation benefit, 11/11 p.27
USW - Timken, GAW proposal, 8/26, p.28
UAW-whitecollar conference (group leader Frazer), 9/23, p.27
Vacations (aluminum and steel contracts), how many new jobs created? 8/5 p.25
Whitecollar automation-jobs conference, 9/2, p.18
Whitecollar overtime pay, new rules, 7/15, p.17
Whitecollar vacation plan granted (Bethlehem, U. S. Steel, Allegheny), 10/7, p.27

Labor Costs:
Steel employment cost up in June, 8/12, p.29

Labor-Management:
AMC profit sharing plan, how Big Three auto workers would fare (chart), 11/25, p.41
Erie Forge-USW agreement, 10/21, p.47
Kaiser-USW release details of "progress sharing", six months (chart), Vaughn and Millerfore Senate subcommittee, 10/14, p.45
Labor committees—what makes them work (Human Relations Committee approach), 8/5, p.41
Labor Dept.'s labor-management programs, 9/2, p.27
Steel formula: New Era in labor (editorial), 7/1, p.11

Labor Panel: See Government

Labor Shortage: See Skilled Labor

Laboratories: See Research & Development

Lasers:
Buddenhagen, Hughes Aircraft: Six areas of laser applications, 12/30, p.33
Laser generator connected to boring mill spindle, 12/2, p.117
Laser from abrasive crystal, blue light, 9/16 p.166
Gas laser visible without infrared TV, Japan, TO, 7/1, p.16
Glass laser rod views color slide, 11/18, p.72
Laser light through water, light hydraulics, 11/4 p.33
Laser potential for welding and machining, TO, 10/7, p.20
Welding uses, TO, 12/30, p.16

Latin America:
Latin Steel: The tide is rising (By Stephen Smoke), 9/30, p.36
Metalworking growth in Latin America (By Stephen Smoke), 10/7, p.72
Steel plants, programs, 10/7, p.73

Lead-Zinc: See Nonferrous

Leaded Steel:
Lees-Bradner: Switch to leaded steels in worms and gears, benefits, 9/9, p.89

Leasing:
Capital equipment leasing, banks entering field, 7/29, p.28 and 8/12, p.25
Leasing uptrend, NICB survey, 11/11, p.26
Machine tools and optical comparators lease plan, 7/22, p.30
Wagner Casting Co. modernizes by leasing equipment, 7/29, p.33

Lehigh University:
Salaries of recent graduates, 7/8, p.17

Licensing:
Overseas licensing boosts domestic business, 8/26, p.103

Light:
Speed of light, is it constant?, 8/12, p.18

Lubricants, Lubrication:
Aluminum cutting oil (Cut-Max 570) and aluminum lubricant (Cindol) marketed by Houghton, 7/29, p.31
Coolant 'freezing' during machining, speeds cutting rate, 11/11, p.31
Draw lubricant, asphalt base, 12/2, p.18
Mobil Oil system cuts cost leaks in maintenance, 11/4, p.98
Molybdenum disulfide in greases, corrosive effects, TO, 9/16, p.36

M

Machine Tool Industry:
AMTDA meeting: Tool salesmen should provide better data, 10/21, p.44
Automaker (Chrysler) cites need of assistance, NMTBA meeting, 11/25, p.44
Automaker (GM) cites machine tool improvement areas, 8/5, p.81
Automakers 'soup up' machine tool sales, 12/2 p.25
Developmental Marketing: Machine tool industry broadens product lines, 9/30, p.46
Distributor salesmen: More technical sales power, fill the information gap, 11/18, p.73
Europe's builders 'caught up' with U. S., reports Dr. Schmidt, Marquette Univ., 8/19, p.29
How modern are toolbuilders' tools? (chart), 12/2, p.26
Jones & Lamson tool lease plan, 7/22, p.30
Michigan machine tool builders surveyed by U. of Mich.: Need more marketing, R&D emphasis, 12/2, p.26
NMTBA report new orders, 9/2, p.28; 9/30, p.27; 10/28, p.27
SBA guarantees tool purchase prices, 10/28, p.27
Walsh-Healey:
Builders (11) test manner of minimum wage determinations; 7/8, p.28
Builders win first round, 11 plaintiffs named, 7/22, p.25
Case reaches Court stage, 8/5, p.27
Case favors industry (two wage rates ruled illegal), 12/16, p.28

Machine Tools & Attachments:
Automatic brazing machine (silver brazing copper lead wires), 12/16, p.77
Automatic chuckers save on complex cast iron hydraulic manifolds, 7/22, p.52
Automatic cycle chucking machine (fractional hp motors), Automatic jig borer (Fosmatic), 11/4, p.93
Automatic lathe loads, unloads work (Snyder), 11/4, p.112
Chucking machine improvements, 8/5, p.56
International Harvester's engine cylinder block transfer line, 7/15, p.29

Machining:
Abrasive machining, how to find profit, 9/16, p.126
Abrasive machining with rotary grinder (aerospace contractor), 7/8, p.72
Boring equipment (large) speed generator casing job, 11/18, p.87
Broaching ends spar machining problem (inside extruded aluminum spar for helicopters), 9/16, p.164
Bug-O for steel fabricators, multipurpose carriage mounted on channel rail, 12/16, p.80
Control of wheelhead feed force aids precision grinding (bearings, bushings), 9/30, p.42
Electrolytic machines handle extra large parts, (Anocut), 7/22, p.29
Machining to half millionth (0.0000005 in.) (Taylor Devices finishes inside cylindrical parts for liquid springs), 7/8, p.58
N/C on Burgmaster turret drill (cast aluminum aircraft manifold), 7/22, p.52
N/C jig borer ends scrap losses (Fosmatic), 11/4, p.93
Renault's balancing machine for engine crankshafts, computer control, 9/9, p.87
Surface finish better with ceramic machining, 11/4, p.89

Machinery Dealers National Assn.:
Moves, B, 10/14, p.53

Machines:
Biomachinery: Machines that mimic men, 11/25, p.92

Magnesia:
Added to slag for longer furnace life, 10/21, p.115

Magnesium:
Conference report: What chance for price cuts in magnesium products? 10/21, p.45
Harvey becomes a producer (new plant, Wash.), 12/2, p.29
Japan's consumption, 11/4, p.150
Magnesium for turbine engines, 11/18, p.72
Magnesium oxide, insulating ceramic conducts heat, 10/21, p.115

Magnetics:
New material (Niostan) cuts magnet costs, superconductor material, 8/12, p.33

Mailing:
Automatic mail sorter (in-plant coding zip mail), 9/2, p.67

Maintenance:
Mobil Oil data processing system (MI/DAC) cuts cost leaks in maintenance, 11/4, p.98
Ultrasonics cuts maintenance time (Caravelle jet engine blade tests), 7/22, p.51
Zirconium (corrosion resistant) nips cost of pump maintenance, 10/7, p.85

Malleable Founders Society:
Ryan: Malleable castings head toward million ton mark, 10/28, p.28

Management:
Developmental marketer: Who he is, what he does, how to find him, judge him, pay him, 9/9, p.76
General Motors, how it maintains management depth, 7/1, p.65
Global need: U. S. management knowhow, 9/23, p.25
Personnel data processing, Ford, 10/7, p.33
Personnel managers out of stream of management: Powell, Intern'l Resistance, 10/14, p.43
Profile of a new president (Fitzgerald, Cutler-Hammer), 12/30, p.26
Psychiatrist cites 'promotion neurosis', 8/5, p.17
Rockefeller proposes management 'Peace Corps', 9/23 p.26
Vice president-marketing concept often fails, 7/8, p.18

Management Congress:
Foreign managers to study in U. S. colleges, 7/22, p.61

Management Systems:
ADA (automatic data acquisition) links Lockheed divisions, 8/26, p.58
ADAPT-GE computer programing, machine tools, 9/23, p.31
Cutler-Hammer's approach to systems, 12/30, p.26
MI/DAC data processing, Mobil Oil, cuts cost leaks in maintenance 11/4, p.98
MTM-GPD (methods, time measurement, general purpose data) for workers, computer system, 10/21, p.47

Manpower: See Skilled Workers

Marine Markets: See Oceans

Marketing:
Bargain hunters ambush sellers of quality welding, 7/22, p.48
Developmental Marketing:
1. The rebirth of the entrepreneur, 9/9, p.50
2. Aluminum shows everybody how, 9/16, p.132
3. Steel builds a bright new image, 9/23 p.50
4. Machine tool industry broadens product lines (systems to chemicals), 9/30, p.46

Machine tool salesmen should provide better data, 10/21, p.44
Tips for effective defense marketing, 7/15, p.25
U. S. Steel, stainless products—marketing, advertising programs, 12/2, p.65
Vice president-marketing concept often fails, 7/8, p.18

Marquette University:
Dr. Schmidt: Europe's machine tool builders caught up with U. S., 8/19, p.29

Material Handling Industry:
CEMA meeting, sales outlook, 10/14, p.47

Material Handling Equipment: Cranes, Hoists:
Stacker crane at Canadian warehouse handles heavy structurals, 10/21, p.125

Trucks, Trailers:
Tandem trailer rig hauls loads up to 300 tons, keeps empty weight down, 8/12, p.93

Material Handling Institute Inc.:
Defines 'producer', 8/5, p.19
Elects M. G. Smith president, B, 12/30, p.25
Elects Monroe Smith president, vice presidents, 10/14, p.47

Materials Report:
Argon moves steel in vacuum degasser, 9/16, p.138
Armco's new blast furnace is charged automatically, 12/9, p.108
Blast furnace rebuild expedited by gunning, refractories, (methods of relining), 9/2, p.72
Continuous vacuum furnace processes refractory metals (Du Pont Center), 9/9, p.85
Copper in stainless eases deep drawing, 10/28, p.52
Fuel oil tubing and pipe gets plastic coat (Republic's X-Trube), 12/2, p.85
Gas alloying gives coils stainless coat, 7/15, p.54
Hoods recover converter heat, 9/30, p.50
Induction stirring aids steel vacuum degassing (Republic), 7/8, p.66
J&L's Big Susan feeds voracious converters, 12/23, p.34
New processes offered through foreign research, (English, Russian, and Italian methods), 7/29, p.95
Perforated stainless cuts clogging, improves filter, 8/26, p.59
Powder plus extrusion equals duplex electrode, (sparkplugs), 12/16, p.82
Precoated steel gains favor in many areas, 11/18, p.83
Pure tungsten granules made by gas reduction, 11/4, p.102
Roll program cards made by mill staff, 8/19, p.56
Stainless flex tubing licks meter problem, 7/22, p.54
Steelmen seek more routes to profits (AISI papers), 10/14, p.148
Steelmen (paradox) save money as materials vanish, 11/25, p.98
Strip galvanizing line allows many variations, 12/30, p.35
Structural steel tubing applications on rise, 8/12, p.94
Three bells aid operation at high top pressure (blast furnace-Japan), 12/2, p.81
Tubemaker thrives on tough, unusual jobs (NTH), 11/11, p.60
Turntables speed mill roll changes, Tokai Iron 9/23, p.56
Weirton reports on coal injection, 8/5, p.48
Why oxygen converters need computer control, 7/1, p.43
Zirconium nips cost of pump maintenance, 10/7, p.85

Materials System:
Composites, who's who (firms making), 10/21, p.110
Evolution of a concept, cover story, 10/21, p.89

Measurements:
Metric measure system predicted for U. S. by Stanford Inst., 8/19, p.53
Soviet metrology on par with ours, team reports, 11/25, p.112

Melting:
See Electron Beam
See Vacuum

Metal Alloying:
Asarco's aluminum smelters . . . computer bares secrets of quality, 7/29, p.90

Metal Cleaning:
Alkaline cleaner removes rust, stains, paint from ferrous metals (Houghton), 9/9, p.87
Autoclave cleaning system dev. (replaces open tanks) and treats aluminum and stainless fuel tube sections for Apollo space capsule, 12/16, p.31

Metal Deposition:
Gold-silicon contacts produced by vapor deposition, 9/16, p.140
Tungsten deposited from the gas phase to form 'granules' of high purity metal, 11/4, p.102

Metal Fibers:
Developments, TO, 12/30, p.16
Tiny fiber key to building giant structures (space age), 7/1, p.32

Metal Foil:
Hamilton Watch expands photoforming plant (tiny parts made from metal foils), 9/9, p.96

Metal Selector:
1963 edition, 10/14, p.105

Metal Show:
New stress on materials, quality, 10/28, p.25

Metal Walls:
"Snap-on" metal-panel, Tishman research for Hauserman, 89/2, p.69

Metallizing:
Avco enters field, plasma coating, etc., 9/16, p.162
Sprayed-on metal (metallizing) speeds scored piston repair for compressor, 9/16, p.168

Metallurgy:
A special study: Trends in metals—power metallurgy, 12/2, p.49
Asarco's computer solves problems in metal alloying, 7/29, p.90
Atomic structure of metal surfaces studied by Aussies, 7/1, p.24

Competitive materials share spotlight at '63 show, 10/14, p.103
New stress on materials, quality, 10/28, p.25
Dr. Weinberg Metallurgists need better information methods, distributing literature, 11/4, p.100

Metalworking:
1st half profits, STEEL surveys 66 firms (chart), 8/12, p.27
1st half profits, STEEL analysis of SEC figures, 9/30, p.25
1963 sales outlook, may set records, 8/12, p.155
1963: How good are metalworking profits (60 firms surveyed for 1st mo.s), 11/11, p.25
1964 sales predicted by STEEL's Panel of Economists, 10/7, p.25
1964: What metalworking managers expect, 11/25, p.86
Changing industrial structure of U. S. (market shifting), 9/9, p.54
Latin America growth, plants, 10/7, p.72
Managers react to steel pact, 7/1, p.20

Metalworking Machinery:
Developmental marketing: Broadens product lines, 9/30, p.46

Metrology: See Measurements

Mexico:
Aluminum smelter 7/15, p.19
Aluminum smelter has unusual casting building, 7/22, p.94
Exports railroad, rolling stock to U. S. firm, 9/2, p.117
How Bruno Paglial built a metalworking empire. TAMSA, 11/25, p.164
Steel pipe shipped to Houston contractors, 11/18, p.18

Missiles: See Space

Mobile Homes Manufacturers Assn.:
Materials shape up for mobile homes, 9/16, p.53

Molybdenum:
Molybdenum powder with improved flow rates, developed for plasma spraying, 10/21, p.117

Monetary:
Treasury to redeem silver certificates for silver bullion, 7/29, p.18

Motion Pictures:
Fire safety, are you sure? 7/22, p.121

Motor & Generator Industry:
Walsh-Healey complaints in wage determinations, 7/8, p.28

Motors, Generators:
Atomic generator tested for unmanned lighthouse beacon, Coast Guard, 12/9, p.117
Magnet clock motor turns rotisserie, 9/16, p.154

Mountings:
Stainless wire mountings (cushions) marketed, 7/29, p.28

N

National Aeronautics & Space Adm.:
Briefing contractors in Supersonic Transport (SST) program, 8/5, p.18
Dissemination of space/missile tech., 11/4, p.108
Dr. Olson: What you can do for space power, 8/12, p.85
Technical Note D-2125 outlines materials problems, seeks solutions, 11/18, p.70
Technology Utilization Program: Hitchhiking on space technology, 12/23, p.26
Temperatures 225 F recorded in upper atmosphere, 11/18, p.84

National Association of Aluminum Distributors:
Annual meeting: Marketing move may bring price stability, 11/25, p.45

National Assn. of Punch Manufacturers:
Formed, elections, 11/11, p.35

National Bureau of Standards:
Precision measurements (Russia vs U. S.), experts (team) reports, 11/25, p.114

National Coil Coaters Assn.:
Harrison, new president; Coil coaters probe auto, appliance, packaging markets, 11/4, p.45

National Electrical Manufacturing Assn.:
Annual meeting, industry report, elections, 10/28, p.28

National Foreign Trade Council:
TWA president: Aim at Mach 2.5, supersonic transport, 12/2, p.88

National Industrial Conference Bd.:
Leasing use survey, 11/11, p.26
Marketing panelists forecast '64 upturn, 9/30, p.27
Moves offices, 7/22, p.31
Projected 1970—rising tide of upper income families, 12/9, p.100

National Machine Tool Builders' Assn.:
Elects Bailey president, 11/25, p.44
Orders, bookings increase, 10/28, p.27
Orders in Oct. high, 12/2, p.25
Rogers (Chrysler) cites need of assistance in equipment at meeting, 11/25, p.44

National Science Foundation:
Drill to mantle of earth (Project Mohole) under review, 11/2, p.18

National Tool, Die & Precision Machining Assn.:
Bender resigns, new executive secretary named, 8/12, p.35

Navy:
Antisubmarine warfare, defense funds, 7/15, p.27
Liquid plastic sealant for fitting metal parts, Quonset Pt., 9/9, p.91

Nickel:
Article: New uses boost nickel's future, 7/8, p.55

Nonferrous:
1963 industry report (sales records), 10/14, p.46
Aluminum shipments down, 8/5, p.28
Lead-zinc price outlook for '64, 12/16, p.26
Nickel, new uses boost future, 7/8, p.55
Tin situation: Price up, stocks o.k., 11/11, p.28

Numerical Controls:
BDSA survey shows who buys numerical control 11/25, p.43
Goal—more technical sales power method to fill the information gap, 11/18, p.73
Fenn Mfg.: Small firm demonstrates payout on N/C equipment, (P&W machine), 11/18, p.29
International Harvester, new engine cylinder line, tape controlled, 7/15, p.29
Lear Siegler, automatic jig borer (Fosmatic N/C) ends scrap losses 11/4, p.93
Pines Eng., tape controlled bender, Numri Form, 11/18, p.31
Seminars in New York stress user aspects, 12/30, p.34
Sperry debuts new solid state N/C unit (UMAC 5), 7/29, p.102

O

Oceans:
Big new markets of '60s:
Oceans of opportunities in the marine market, 9/2, p.61
How to find megabucks under the oceans, 9/23, p.43
Thresher disaster spurs engineering work, Navy's special board, DSSRG, 11/18, p.27

Ohio:
R&D foundation aids development program, new bill, 8/19, p.33

Open Hearths:
Steam cooled roof, new design may save steelmen buck a ton, 12/9, p.96

Orders, Deliveries:
Editorial: Emotional factor No. 1 (delivery dates), 8/19, p.15
GE's integrated automation system, Meter Div., 8/12, p.90

Ore Preparation:
See Pelletizing
See Reduction

Overseas: See Foreign

Oxygen Furnaces:
Allegheny Ludlum licensed by Kaiser for L-D process, 8/19, p.52
Armco's new facilities, Ashland, Ky., 12/2, p.31
Growth pattern of U. S. basic oxygen steelmaking capacity (plants) 9/30, p.28
Heat exchanger cools BOF gases for converter, 9/2, p.74
Republic Steel awards contracts for Gadsden, Ala., and Warren, Ohio, 8/19, p.28
Waste gas cleaning systems, 8/19, p.58

Oxygen Plants:
Kaiser Steel supply boosted: Sources—new Linde on-site gaseous oxygen-nitrogen plant, 7/22, p.31

Oxygen Processes: See Steelmaking

P

Packaging, Containers:
Aluminum package design education award (Alcoa), 12/2, p.17
Automakers pressure for proper packaging, 8/19, p.89
Nylon-paper cans, TO, 8/19, p.20
Total design approach halves packaging, shipping costs at Clarke Floor Machine, 11/11, p.64

Packing Rings:
Neoprene-duck packing rings (Vee-Flex) cut maintenance expenses, 12/9, p.130

Patents:
Californian metalworker seeks better invention protection, 11/11, p.29
Patent hassle despite JFK memo, 10/21, p.44

Peace Research Institute:
Reverse concept, masses work while elite loaf, 7/1, p.15

Pelletizing:
Dravo builds four pelletizing plants for (firms), 8/19, p.66
Inland subsidiary builds pelletizing plant in Wis., 10/28, p.31
Pelletizing plant, St. Noire, Que. (Dravo contract), 7/29, p.19

People Renting:
Firms rent engineers and technicians, 11/11, p.27

Personnel: See Management

Philippines:
Pig iron smelter (AID's Mr. Baum consultant), 9/30, p.83

Phosphatizing System:
Parker-Rust Proof: Phosphatizing system shows competitive face, 11/25, p.97

Photoforming:
Hamilton Watch expands facilities (tiny parts made from metal foils), 9/9, p.96

Photography:
3-D photography tech. plots contoured surfaces, 12/16, p.76

Pig Iron:
Stora rotary furnace replaces blast furnace in producing pig iron directly from iron ore, 11/11, p.59

Pilot Plants:
Bearing maker trains unskilled workers to operate machine tools, 9/9, p.31

Pipelines:
AGA notes declining need for steel pipe, 9/9, p.28
Texas Eastern natural gas line expansion ok'd by FPC, 7/15, p.28

Pipe Mills:
National Tube adds electric weld pipe mill at Lorain, 7/8, p.30

Pipe Plug Producers Council:
Formed in Cleveland, 8/5, p.18

Pipe, Tubing, Fittings:
AISI Type 304 stainless, hexagonal tubing: Tubemaker (NTH) thrives on tough, unusual jobs, 11/11, p.60
Aluminum drill pipe, test for flaws, 9/9, p.87
Fuel oil tubing and pipe has welded fittings, is plastic coating, 12/2, p.85
Pipe coupling machine new, 10/21, p.36
Stainless flex tubing licks meter problem, 7/22, p.54
Stainless missile fuel tubes are shear spun, 12/9, p.47
Structural steel tubing applications on rise, 8/12, p.94
Tube bending machine N/C, 11/18, p.31
Tube tests (See Inspection)
Tubing "configured" forms complex shapes, 11/4, p.105

Plant Expansion, Developments:
Bethlehem bar mill, Johnstown, 9/2, p.27
Chrysler stamping plant, near Detroit, 12/9, p.51
Combustion Engineering expansion plans, 9/9, p.33
Howe Sound Aluminum, $5 million, 7/8, p.30
Olin's aluminum facilities, Hannibal, Ohio, 7/15, p.33
Inland starts second phase, $200 million, 7/8, p.31
Reynolds canmaking facilities, Calif. and Ala., 7/8, p.31
Republic barmaking facilities, S. Chicago, 9/16, p.55
Stelco, $118 million, 7/8, p.30
TC&I's multimillion program, facilities at Fairfield, Ala., 10/21, p.49
U. S. Steel, tin plate mill at Gary, 12/23, p.24

Plastics:
Cornell study: Plastic design for structures under pressure, 11/25, p.116
Disposable plastic bag method of welding titanium, 7/22, p.29
Electrolytic chrome plated thermoplastics displayed, TO, 12/2, p.20
Exposition speaker (Loewy): Plastics, how big a bite out of metals markets? 12/2, p.29
Fabric laminations improved, plastic resin system, 9/16, p.132
Fiberglas panels, spray-up facilities, 10/14, p.49
Fuel oil tubing gets plastic coat 'X-Trube,' 12/2, p.85
Liquid plastic sealant (Loctite) for fitting metal parts, 9/9, p.91
Riveting suggestions for vinyl-metal laminates (stereo record player cabinets), 12/16, p.81
Teflon-aluminum laminate dev. by heat pressure bonding, 9/2, p.31
Vinyl coated window frames, TO, 12/2, p.20
X-15 windshield gets heated cradle cover, 12/23, p.26

Plating: See Electroplating, Plating

Poland:
Machine tool output, 11/25, p.163
Scientific and technological agreements, 12/30, p.68

Powder Metallurgy:
A way to make almost any part (STEEL Feature), 12/2, p.49
Custom makers of powder metallurgy parts (chart), 12/2, p.61
Equipment blasts carbides into powder for reuse, 9/2, p.70
Ford sees big surge in powder metal usage, 12/2, p.109
Molybdenum powder with improved flow rates for plasma spraying, 10/21, p.117

Power Sources:
Pioneers in the search for new power, 8/12, p.83

Presses:
High speed stamping press for auto parts (AMC), 7/29, p.100

'Instant' rubber pad blanking methods on punching press, low cost, 12/9, p.105
Packing rings on hydraulic presses of fabric (duck) and molded neoprene, 12/9, p.130

Price Fixing:
Fastener executives charge indictment in Los Angeles 'unfounded,' 9/9, p.26
Steelmakers subpoened for data on pricing practices, 10/28, p.26

Prices:
Alcoa's aluminum marketing policy may bring price stability, 11/25, p.45
Alcoa revised commodity prices, 12/2, p.31
Aluminum prices, pressures continue ('64 outlook), 12/16, p.25
Custom smelter copper price quotation discontinued in STEEL, 7/29, p.116
Lead-zinc prices up in '64, outlook, 12/16, p.26

Production:
Steel ingots, '64 forecast, 9/30, p.27
World steel, 1957-1963, 12/2, p.18
World steel record in '63, production by country (chart), 12/30, p.22

Production Engineering Research Assn.:
Boring bar (44 ft long-12 in. diameter) speeds generator casing job, 11/18, p.87

Production Lines:
International Harvester's new engine cylinder block tape controlled line, 7/15, p.29
Ford's Wixom, Mich., plant may switch to electrocoating auto bodies, bypassing galvanized steel, 7/8, p.25

Productivity:
Indirect worker productivity, target for cost cutters, 7/15, p.28
Universal-Cyclops employees get antiproductivity edict, 8/19, p.28
Work measurement (computer), 10/21, p.4

Profits: See Financial

Psychiatrists:
Psychiatrist cites 'promotion neurosis,' 8/5, p.17

Pumps:
Zirconium nips cost of pump maintenance, 10/7, p.85

Punching:
Hole puncher, new tech. employs tungsten arc inert gas, 9/23, p.18
'Instant' (rubber pad) blanking methods at Convair shortcut conventional costs, cost of tools, 12/9, p.105
How standardization solves punch problems, cuts costs, 11/11, p.58

R

Railroads:
Alco locomotive sent to Greece (cover pic), 11/18, p.66
Aluminum structural test for coach window sections, 11/25, p.109
Capital spending, '64 predictions, 12/30, p.23
Fuel-cell locomotives, 10/7, p.19
Plastic end shell fitted to Pullman transit car, 10/7, p.65
Railweight system, electronic scale gives individual car capacity, 12/9, p.116
Strike outlook, nobody wants compulsory arbitration, but—, 7/22, p.26

Rapid Transit: See Transportation

Recreational Markets:
AMF's market growth, 9/9, p.62

Reduction:
New ore preparation bypasses pelletizing (Bratton, inventor), 12/23, p.14
Pure tungsten granules made by gas reduction, 11/4, p.102

Refractories:
Blast furnace relining expedited by gunning refractories, 9/2, p.72
Furnace lining benefited by magnesia added to slag, calcined dolomite, 10/21, p.115
Thermomold insulating refractory: Disintegrating hot top material holds up while ingot is cast, then breaks up into powder or dust, 11/25, p.98

Refractory Metals:
Beryllium oxide ceramic refractories, phase change, 9/2, p.18
Continuous vacuum furnace (Du Pont) processes refractory metals, 9/9, p.85
GE's new tantalum alloy for hi temp uses, 12/16, p.29
Refractory fibers, inorganic bonding, 11/25, p.47

Renting:
Renting engineers and technicians, 11/11, p.27

Research & Development:
AF's new R&D groups at Wright-Patterson labs, 9/9, p.29
American Can: Princeton research lab to diversify markets, 8/12, p.31
Are our R&D dollars paying off? Experts view government spending a threat to industry goals and economy, 8/26, p.25
Coal research lab (Eastern Assn.), 10/21, p.121
Defense R&D for 1964, 7/15, p.27
Defense R&D program, trends in spending, 12/2, p.28
Electronics exec suggests way to cut R&D overlap, 9/9, p.28
Farming out R&D advised by Battelle, 8/26, p.27
Foreign research, new processes (materials report), 7/29, p.95
Gas Atmospheres Inc. broadens R&D, 8/26, p.33
Ohio R&D foundation aids industrial development, 8/19, p.33
Rockwell aims R&D at portable power tools, 9/9, p.33
Senate-House R&D Committee recommended by Rep. Elliott, 12/30, p.24

Rhenium:
Exotic metal (rhenium wire for space age use) challenge to heat treaters, 12/9, p.115

Riveting: See Fastening

Rolling Mills:
Oscillating rolling mill invented by Dr. Karel Saxel (England), 12/30, p.13
Turntables speed mill roll changes (Tokai Iron & Steel), 9/23, p.56

Rubber:
How to stretch your rubber goods dollar (new designs): John Garrett, Goodyear, 7/8, p.59
Tank car rubber lined, 8/5, p.31

Russia:
Aims to boost trade (Polish report), 7/22, p.93
Camera clicks 500 million frames per second, 7/1, p.74
Continuous casting (by 1968), 8/26, p.103
Explosive forging turbine blades for jets, 8/5, p.19
Gold sales to West, 11/18, p.121
Metrology (precision measurement), U. S.-Russia close pace, 11/25, p.112
Radiometric gages for steelmaking, Dnieper region, 8/26, p.29
Trades with more than 80 countries, 12/30, p.68
Vibration refines metal, 8/5, p.18
Wheat deal to spur trade with Reds? 10/21, p.42

Rustproofing: See Corrosion

S

Salaries:
Executive pay abroad, 11/4, p.43

Salesmen:
Fill the information gap with N/C: Goal, more technical sales power methods, 11/18, p.73

Sales Programs: See Marketing

Sandwich Cores:
Aluminum diecast sandwiches for 'instant' airfields, 12/16, p.78

Scales, Weighing:
Japan's Fuji Iron uses automated weighing, 7/22, p.51
Railweight, electronic scale records individual cars up to 6 miles per hour, 12/9, p.116

Scrap:
Scrap carbides crushed into powder for reuse, 9/2, p.70

Sealants:
Liquid plastic (Loctite) used in fitting metal parts, 9/9, p.91

Service Centers: See Warehousing

Shearing: See Cutting

Sheet & Strip:
Computer upgrades efficient use of steel sheets, 8/5, p.46
Precoated strip used in many areas, 11/18, p.83

Ships, Shipbuilding:
Barge-mounted atomic powerplant, 8/19, p.48
Big new markets of '60s, maritime industry, 9/2, p.61
Thresher submarine disaster spurs ocean engineering work, 11/18, p.27

Shock Waves:
Underwater shock waves remove cores from castings (reducing to powder), British, 8/19, p.97 and 9/16, p.153

Shotblasting:
Zinc shotblasted on steel structurals for protection, 12/2, p.20

Silicon:
Silicon carbide used for laser material, 9/16, p.166
Gold-silicon alloy contacts produced by vapor deposition, 9/16, p.140

Sintering:
Blast pulverizes carbides for resintering, 9/2, p.70
Continuous tungsten sintering furnace, TO, 12/23, p.16

Skilled Labor:
Are you facing a skilled labor shortage? Survey of managers, 11/18, p.25
Editorial: Skilled help wanted, 12/9, p.31
NSF predicts shortage of technical manpower, 9/2, p.29

Slabbing Mills:
Automatic information system at Japanese mill, 9/9, p.93

Small Business Administration:
Government contracts, 8/19, p.66
Guarantees machine tool purchase prices for small firms, 10/28, p.27

Smelters, Refiners:
Aluminum smelter, Mexico, 7/15, p.19
Aluminum smelter, Mexico, boasts casting building (pic), 7/22, p.94
Asarco's aluminum smelters . . . computer bares secrets of quality (metal alloying), 7/29, p.90
Exothermic annealing for refinery piping, 8/26, p.60
Lead-zinc smelter for N. B., 12/30, p.25
Strategic-Udy smelter, Venezuela, 7/15, p.31

Smog, Smoke:
Chicago tightens air pollution code, firms involved, 8/5, p.82
ICRA develops smog unit catalyst, 7/29, p.132

Society of Automotive Engineers:
Congress and expo bring product and process technologies, 12/30, p.33
Fisher Body (Cotter) address: GM's "A" body design may start trend, 12/23, p.63

Society of the Plastics Industry:
Annual meeting, estimates plastic sales, 12/2, p.29

Solar Energy:
Pioneers in power sources, 8/12, p.89
Solar cells on exterior of rockets gather energy from sun, 7/22, p.29
Solar panels fabricated for space ship, 8/12, p.33
Sunflower project (TRW), heat from sun in reflecting mirror, 8/12, p.82 and TO, 7/29, p.20

Solders:
Cladding copper with thick solder coat, 9/23, p.31

South America:
Argentine steel mill approved for Rio Santiago, 12/9, p.165
Four countries market heavy electrical generating equipment, 7/29, p.139

Space Materials & Developments:
Big New Markets of '60s:
A galaxy of new material concepts, 7/1, p.32
Building bigger horses for the chariots of space, 7/15, p.46
How to get your products into orbit, spacecraft, 7/29, p.79
ARAC program for dissemination of space/missile technology, 11/4, p.108
Atlas ICBMs and space launch vehicles, piggybacking, 8/26, p.35
CEBM system, four-way tester checks Polaris cases, 9/2, p.77
Charring ablator heat shield reentry speeds, 7/29, p.18
Coated foils (thin metals) studied for re-usable orbital vehicles, 12/9, p.122
Electrical power system for onboard rocket components (solar cells), 7/22, p.29
Exotic metals challenge to heat treaters, 12/9, p.115
Foamed metals for space capsules dev. by Ipsen, 8/26, p.31
Fuel tube sections cleaned with new autoclave system, 12/16, p.31
Gemini rocket engines tested in near vacuum, 11/11, p.75
Hitchhiking on space technology (DRI spinoff developments, and NASA Tech. Utilization Program), 12/23, p.26
Hydraulics, lucrative market, 7/15, p.53
Lockalloy, new space alloy vies with lightweight magnesium and beryllium, 9/2, p.33
MPEP study group formed, may link with Materials Advisory Bd., 7/8, p.28
Mariner Mars vehicle, solar panels fabricated, 8/12, p.33
Missile fuel lines (Olive Oyl and Steel Horn), explosive forming, etc., 7/29, p.88
Missile fuel tubes shear spun, Parsons Corp., 12/9, p.47
NASA: Technical Note D-2125 outlines materials problems, 11/18, p.70
NASA: Technology Utilization Program, 12/23, p.26
Power systems needed (article), 8/12, p.83
Rocket motors, two new elastomeric insulation materials dev., 12/16, p.33
Rocket nozzles, composite material has high heat resistance, 9/23, p.31
Satellites and spacecraft: How to get your products into orbit, 7/29, p.79
Satellite communications control center, 8/12, p.109
Saturn V 350 ft (cover) 7/15
Shock tube stimulates space reentry, 9/30, p.32
Temperatures recorded in upper atmosphere, 11/18, p.84
Valve aids in simulating atmosphere on moon, 11/11, p.69

Sparkplugs:
Powder plus extrusion equals duplex electrode (sparkplug), 2/16, p.62

Spinning:
Parsons Corp., Aerospace Div.: New machine shear spins long missile fuel tubes, 12/9, p.47

Stainless Steel:
AISI Type 304, stainless-hexagonal tubing, for reactor (tough, unusual job), 11/11, p.60
Allegheny Ludlum, new Type 211 stainless-strip form, 9/9, p.31
Armco's Type 300 stainless new, 10/14, p.34
Armco's Type 300: Copper in stainless eases drawing, 10/28, p.52

Armco studies stainless slabs from Japan, 8/26, p.28
Perforated stainless for filters, 8/26, p.59
Stainless flex tubing licks meter problem, 7/22, p.54
Stainless steel cushions (Met-L-Flex) mountings, marketed, 7/29, p.28
U. S. Steel aids customers to sell its stainless products (marketing-advertising programs), 12/2, p.65

Stamping:
Convair parts, rubber pad method stamps out blanks in short time, 12/9, p.106

Standards:
How standardization solves punch problems, cuts costs, 11/11, p.58
Welding - radiographics standards on porosity, missile field, 9/2, p.68

Stanford Research Institute:
Aerospace teamwork needed between private industry and government, study report, 7/15, p.27
Metric measure system predicted for U. S., 8/19, p.53

Steel Coils:
Coil coaters probe auto, appliance, packaging markets, 11/4, p.45

STEEL Features:
Big New Markets of Sixties:
A galaxy of new materials concepts (space), 7/1, p.32
Building bigger horses for the chariots of space, 7/15, p.46
How to get your products into orbit (spacecraft), 7/29, p.79
Wanted: Pioneers in search for new fuel power, 8/12, p.82
Exploding realm of the peaceful atom, 8/19, p.44
Tapping the potential of the peaceful atom, 8/26, p.48
Oceans of opportunities in the marine market, 9/2, p.61
How to find megabucks under the oceans, 9/23, p.43
How we'll move the masses (rapid transit, etc.), 10/7, p.65
Educational equipment—machines that teach, 10/28, p.40
Vending machines count to profits, 11/11, p.51
Biomachinery, machines mimic men, 11/25, p.92
Consumer durables, items for the affluent, 12/9, p.100
Electronic data processing, 12/16, p.70
Ceramic tools win some new and some tougher jobs, 11/4, p.89
Cooled roofs may save steelmen buck a ton, 12/9, p.97
Exporter (Chamberlain) tells how you can succeed in foreign markets, 11/18, p.67
Hitchhiking on space technology (DRI spinoff; NASA tech. utilization program), 12/23, p.26
How to find profit in abrasive machining, 9/16, p.126
Latin steel: The tide is rising, 9/30, p.36
Look what you can do with adhesives, 8/5, p.36
Nickel, new uses boost future, 7/8, p.55
Powder metallurgy: A way to make almost any part, 12/2, p.49
What metalworking managers expect in 1964, 11/25, p.86

Steel Founders' Society of America:
Broadens research plans, 10/21, p.124

Steel Industry:
Automation: Where do we go from here? 8/26, p.56
Basic oxygen steelmaking accelerates (companies, plants), 9/30, p.28
Capital spending, plant and equipment in 1962, 9/2, p.25
Chicago mills serve 40% of steel market, 9/30, p.17
Employment costs up, June, 8/12, p.29
Housing market, siding and structurals, 10/7, p.28
Industry weighs pros, cons of steel pact, 7/1, p.19
Integrated mills-dual distribution, Small Business Committee hearings, 9/2, p.29
Paradox: Steelmen save money as materials vanish, 11/25, p.98
Pricing probe, Grand Jury subpoenas steelmakers, 10/28, p.26
Steelmakers eye pressure pouring, 7/29, p.25
Steelmen seek more routes to profits (AISI and AISE technical papers), 10/14, p.148
Western states, consumption in '62, 9/16, p.53
See also Financial (earnings)
See also Developmental Marketing
See also Production

Steelmaking:
Armco lights new "Amanda" blast furnace, Ashland, Ky., 10/28, p.32
Armco's blast furnace (Amanda) is charged automatically, 12/9, p.108; has thin skinned wall, 12/23, p.15
Blast furnace (Fuji Iron & Steel) has three bells, aids operation at high top pressure, 12/2, p.81
Blast furnace (J&L's Susan) feeds voracious converters, to supply converter hot metal, 12/23, p.34
Blast furnace rebuild (lining) expedited by gunning refractories, 9/2, p.72
Burner used to produce short, intense flame (BISRA), 8/12, p.108
Coal injection, Welrton report, 8/5, p.48
Cooled roofs (hybrid furnace) may save steelmen buck a ton (Linde installs at Republic) combines oxygen and openhearth practice, 12/9, p.96
Degassing units (see Vacuum)
Disintegrating hot tops (Vanish Tops), material breaks up into dust (Thermomold), 11/25, p.98
Elongation per pass (skin mill) digital measuring system, 11/25, p.100
Exothermics, wider uses, 8/26, p.62
Flameproofed corrugated cardboard used as mold liner, 11/25, p.98
Hot slab measured by light beam, 11/18, p.20
Induction stirring (ladle) aids steel vacuum degassing, Republic, 7/8, p.66
Measuring level of molten steel in ladle (Russia), TO, 12/23, p.16
Oxygen converters, waste gas cleaning systems, 8/19, p.58
Oxygen converters, why the need for computer control, 7/1, p.43
Oxygen: Growth pattern of U. S. basic oxygen steelmaking capacity (plants), 9/30, p.28
Oxygen: Hoods on basic oxygen furnaces recover converter heat (B&W), 9/30, p.50
Oxygen L-D license for Allegheny Ludlum, 8/19, p.52
Pressure pouring steel slabs (Amsted process), companies licensed, 7/29, p.25
Pressure pouring helps Eastern Stainless to cut costs, 10/14, p.51
Radiometric gages used by Reds in steelmaking, 8/26, p.29
Roll program cards made by mill staff (CF&I) regulate new wide flange beam mill, 8/19, p.56
Strategic-Udy smelter (pig iron) for Venezuela, 7/15, p.31
Strip galvanizing line allows many variations, 12/30, p.35
Turntables speed hot strip mill roll changes, Tokai Iron & Steel, 9/23, p.56
See also Vacuum

Steelmaking Equipment:
TRW, Concast agreement for casting machine computers, 12/9, p.76

Steel Mill Controls:
Automatic information system, slabbing mill, Japan, 9/9, p.93
Automation: Where do we go from here? (GE's W. E. Miller), 8/26, p.56
CF&I Prodac control cards (digital automatic) regulate wide flange beam mill, 8/19, p.56
Computer control, why needed for oxygen converters, 7/1, p.43
Computer controlled strip mill turns out hot bands, Great Lakes Steel, 10/28, p.30
Computer controls cut lengths, beam and section mill, 8/12, p.31
Digital measuring—elongation per pass on skin mill, 11/25, p.100
Telemetry system at Ford's strip-rolling mill, 8/12, p.110

Steel Mill Products:
1962 steel mill product receipts in seven Western states, consumption forecast, 9/16, p.53
3rd quarter inventory survey, 9/9, p.25
4th quarter survey, 12/2, p.27

Steel Mills:
Arkansas mill, reinforcing bars (operator Magnolia Steel), 8/19, p.27
Australia, Hamersley Ltd., 8/12, p.29
Buenos Aires integrated mill ok'd for Rio Santiago, 12/9, p.165
Japan's Tokai opens continuous strip mill, 9/9, p.127
Philippines, integrated steel mill-loan completed, 7/8, p.17
West German firm's model of integrated mill, 7/8, p.101

Steel Service Center Institute:
Awards 1st fellowship, B, 12/9, p.53
Elects Wells asst. to president, 11/18, p.29
Welch addresses West Coast distributors, trouble spots reported; shipping 8.2 million tons, 12/2, p.27

Stockpiles:
Action not expected on stockpile proposal, 11/11, p.29

Strapping:
3 head strapper (heavy gage wire coils) operated by one man from console, 12/16, p.86

Stretch Forming:
See Forming, Bending

Strikes: See Labor

Structurals:
Aluminum joint tests predict fatigue behavior (railroad coach window shown), 11/25, p.109
Structural steel tubing applications (New York Life Bldg.), 8/12, p.94

Supersonic Transports: See Aircraft

Suppliers:
Parts supplier (Cutler-Hammer), approach to management systems, 12/30, p.26
Steel suppliers forecast, 9/30, p.30

Surface Treatment:
See Finishes, Coatings
See Metal Cleaning, Finishing
See Machining

Surplus Tools:
Government auction (Columbus), bidders, 8/19, p.52

Systems Engineering:
See Management Systems

Switzerland:
Rundt: Swiss content with global reputation, 11/11, p.105

T

Taconite Plant:
Ford, Oglebay Norton plans, Minnesota, 8/5, p.30

Tape Controls: See Numerical Controls

Taxes:
Tax cut doubtful this year, 8/19, p.27
See also Depreciation

Teaching Devices: See Education

Technology:
Biotechnology: Machines that mimic man, 11/25, p.94
Hitchhiking on space technology: NASA's Technology Utilization Program, 12/23, p.26

Telephones:
Univac data line terminal computer, 11/11, p.74
Undersea coaxial cable welded (links U. S. with other countries), 7/22, p.47

Temperatures:
Testing surface temperature at 5000° F (nonmetallic materials), 7/29, p.33
Upper atmosphere temp. as low as 225° F recorded, 11/18, p.84

Tests: See Inspection, Testing

Texas:
Highway construction steel market reopened for importers, 11/18, p.28

Tin: See Nonferrous

Titanium:
Titanium leads in material for supersonic transports, 7/1, p.24

Tools & Dies:
Diecasting dies, gas fired preheaters cut time, 7/8, p.94
Machinable carbide (Ferro-Tic C) solves galling problem, 12/9, p.107
Polyurethane tooling cast to shape, 7/15, p.60
Rubber 'instant' blanking and two piece, or male-female, die methods cut punching costs, 12/9, p.105

Tools (Cutting):
Airbrasive tool for fine cutting, 7/29, p.87
Blast pulverizes carbide parts for reuse, 9/2, p.70
Ceramic tools win some new and some tougher jobs (STEEL features), 11/4, p.89
Freezing metals speeds cutting rate, 11/11, p.31
Tool holds carbide inserts (saves used tungsten tools), 9/9, p.31
Wafer dicing tech. (multiblade tech.), 10/14, p.49

Tools (Hand):
Hand tool route to automation, Production Machine Div., 11/11, p.56

Trade Missions:
Commerce Dept. mission members report tour to Belgium, Norway, Denmark at Cleveland session, 9/23, p.89
Gearmakers report trade mission to Europe, 11/4, p.43

Training:
Bearingmaker trains unskilled workers to operate machine tools at new plant, 9/9, p.31
Chrysler local (whitecollar unit) wins U. S. training grant, 11/18, p.26
Distributor salesmen, filling the information gap with numerical controlled machines, 11/18, p.73
Otis Elevator testing machine, students operate, 10/28, p.31
Vocational schools (Bedford), why it pays to support, 8/5, p.53

Transportation:
60s big new markets: How we'll move the masses (rapid transits, etc.), 10/7, p.65
Battery powered trolley buses concept, 9/9, p.17
Cities studying urban transport, proposals, 10/7, p.66
Hydrofoils vie with trains for N. Y. commuting (cover pic), 9/2
Monorail system, French license to AMF, 7/29, p.19

Trends in Metals:
Powder metallurgy: A way to make almost any part, 12/2, p.49

Trucks, Trailers:
Trailers haul up to 300 tons (alloy keeps empty weight down), 8/12, p.93

Tube Benders:
Pines Eng. tape controlled bender, 11/18, p.31

Tube Mills:
NTH: Tubemaker thrives on tough, unusual jobs (AISI 304 stainless, hexagonal tubing), 11/11, p.60

Yoder mill for English firm: Makes high pressure boiler tubes, 11/11, p.71

Tubing: See Pipe, Tubing

Tubular & Split Rivet Council:
Suggestions for riveting vinyl-metal laminates, 12/16, p.81

Tungsten:
Electron beam welding report, 9/30, p.45
Pure tungsten granules made by gas reduction, 11/4, p.102

Turbines:
Gas turbines, new power source (100 million watts of electricity), 8/12, p.88
Magnesium for turbine engines, 11/18, p.72
Single fuel source for lighting, heating, cooling building, new concept, 12/9, p.35

U

Ultrasonics:
Metal inspection device, "Sonicon," 9/16, p.33
Ultrasonics cuts maintenance time (portable inspection unit for Caravelle jet engine blades), 7/22 p.51
Ultrasonic inspection on production line, 11/18, p.90

Underseas: See Oceans

U. S. Chamber of Commerce:
Business outlook-2nd half, conference speakers (Such, Block, Dr. Schmidt), 7/8, p.27

University of Michigan:
Study: Tool builders need more marketing, R&D emphasis, 12/2, p.26

Unskilled Workers: See Training

Urban Renewal:
See Area Development

V

Vacations: See Labor

Vacuum:
Argon moves steel in vacuum degasser, 9/16, p.138
Cameron Iron Wks., new vacuum melt shop (new producer), 8/5, p.30
Du Pont Center—continuous vacuum furnace processes refractory metals, 9/9, p.85
Latrobe Steel, new vacuum steelmaking system, Therm-I-Vac melt shop, 12/2, p.31
Latrobe vacuum melt system permits rapid cycling with high flexibility, 12/9, p.110
Republic Steel, vacuum melt degassing unit at Canton boosts sales, 7/1, p.25
Republic, vacuum degassing unit, Canton, has ladle-induction stirrer, 7/8, p.66
Republic, vacuum control system (Consarmatic), Canton, 9/2, p.29
U. S. Steel degassing unit, S. Chicago, 12/2, p.36
Vacuum degassing, Ruhrstahl-Heraeus process, Snorkels submerged in ladle, argon injection, 9/16, p.138
Weirton installs vacuum degassing unit, 9/23, p.33

Value Analysis:
Investment castings, benefits of joint value analysis cited, 9/9, p.91

Valves:
Plastic clad coat, 8/5, p.60
Valve aids in space chamber for simulating atmosphere on moon, 11/11, p.69
Zirconium use, 10/7, p.85

Vending Machines:
Big new markets of the sixties, 11/11, p.50
Industry outlook, markets, plant and office feeding, 10/21, p.126

Vocational Training:
Bedford High: Why it pays to support our vocational schools, 8/5, p.53

W

Wages:
Wage increases, BLS statistics, 9/2, p.18

Walsh-Healey: See Government

Warehouse:
Marsh Steel revitalizes and expands service center, 11/18, p.33
Stacker crane at Dominion Bridge handles heavy structurals, 10/21, p.125

Warehousing, Distribution:
Service Centers to do more processing (costs), 7/29, p.29

Wastes:
Mill scale used for organic gardens, 9/9, p.64

Water:
Desalinization-nuclear plants (basis for new nuclear industry), speaker at Atomic Industrial Forum, 12/9, p.128

Weighing: See Scales

Weld Porosity:
New rating system, Martin's radiographics standards, 9/2, p.68

Welding Equipment:
High frequency welder joins heavy walled tubing, 11/11, p.71
Preformed welding "kits" for field joining jobs, 8/26, p.65

Welding (Arc):
Arcspotweld fastens locator bracket to jig with Airco gun (AF cargo plane), 12/9, p.119
CO_2-O_2 mixture speeds welding (Japanese tech.), carbon dioxide (4 parts) and oxygen (1 part) plus a special electrode wire, 12/23, p.33
CO_2 welding units slash costs (GE heat exchangers for home furnaces), 11/25, p.103
Pigma welder aids nuclear progress, 10/7, p.17
Plastic bags used in welding titanium, 7/22, p.29
Pulsed arcwelding, British tech. welds thin metals, 8/19, p.52
Spotwelding (Mig) aluminum to other metals, new Alcoa process, 11/4, p.47
Spotwelding via TIG (tungsten arc inert gas), set for production line (Sciaky unit), 10/21, p.123
Tandem submerged arcwelder mounted on large manipulator, 8/5, p.40
Telephone cable (underseas) welding, 7/22, p.47

Welding (Electron Beam):
Report on EB welding of tungsten, 9/30, p.45

Welding (Resistance):
Automatic welder turns blanks into welded tanks, 7/29, p.92
Spikewelding applications, 7/22, p.50
Wire thinner than hair welded with a precision resistance welder at Boeing, 8/19, p.53

Welding Rods:
Invarod, new welding rod (Invar alloy), 11/4, p.105

Weldments:
Bargain hunters ambush sellers of quality welding: Helmut Thielsch, 7/22, p.48

Whitecollar: See Labor

Wire:
Automatic 3 head strapper (large gage wire coils), 12/16, p.86
Automatic electromagnetic tester of wire cables in hoists, 10/28, p.17
Fine tungsten wire produced by Russians, 12/23, p.14
Frictionwelds for wire, 9/9, p.19
Stainless wire mountings (cushions) marketed, 7/29, p.28
Stainless wire for clinical sutures, 8/5, p.18
Wire thinner than hair welded by Boeing unit, 8/19, p.53

Work Measurement:
Computerized time study, 10/21, p.47

World Fair:
Rundt reports New York World Fair needs foreign exhibitors, 8/19, p.97
SKF exhibit symbolizes modern motion engineering, 12/9, p.116

World Trade: See Foreign Trade

XYZ

Zinc:
Zinc phosphating tech., 9/16, p.34

Zirconium:
Zirconium corrosion resistance material for chemical pump and valves, 10/7, p.85

COMPANY INDEX

A

Abbeville Corp.:
Machine mount, IE, 9/2, p.128

Abbott Screw & Mfg. Co.:
Affiliated with Kenosha Automatic, B, 10/7, p.36

Acheson Colloids Co.:
Tungsten disulfide in lube, IE, 7/1, p.91

Acme Mfg. Co.:
Buffing attachment, IE, 9/2, p.137
Finisher for decorative aluminum extrusions, IE 7/29, p.149
Machine combines polishing, satin finishing, IE, 10/28, p.97

Acme Steel Co.:
3 head strapper (wire coil), one man operates three sections from a console, 12/16, p.86
Hot blast cupola for basic converters designed by Dravo, 9/23, p.59

Acra Electric Corp.:
Spee-Degreaser for metals, plastics, IE, 9/9, p.140

Aero-Flow Dynamics Inc.:
Buys Schmieg, B, 7/29, p.35

Aerojet-General Corp.:
Extracting oxygen from moon materials for use as rocket propellents, 11/11, p.72
Plastic rocket motor case, 9/16, p.153
Seeks better rocket case fibers, 11/18, p.92

Aero-Motive Mfg. Co.:
Hose reels resist vibration, IE, 10/7, p.135

Aeronca Mfg. Corp.:
Cincinnati N/C VerciPower, tool changer, IE, 10/7, p.131

Aerospace Products Group:
Insulating tape resists heat, IE, 11/18, p.140

Airmotive Machining & Engineering Corp.:
Automatic chuckers save on complex cast iron hydraulic manifolds, 7/22, p.52

Air Products & Chemicals Inc.:
Air separation plant opened in Delaware City, 10/14, p.51

Air Reduction Sales Co.:
Iron powder electrode welds mild steel, IE, 8/12, p.172
Thermocouple lance, IE, 8/12, p.172
Spotwelding gun (MIGet) fastens locator bracket to jig (AF cargo plane), 12/9, p.119
Wire feeder for welding aluminum, IE, 7/1, p.85

Airoyal Mfg. Co.:
Air, hydraulic cylinder has integral control, IE, 8/12, p.172

Air-Vac Engineering Co.:
Solder Gobbler/iron, IE, 9/23, p.108

Ajax Magnethermic Corp.:
Automatic control for motor generators IE, 11/11, p.121
Builds vacuum furnace for Carpenter Steel, 12/16, p.35
Enters continuous steel casting equipment market, 11/4, p.49
RF generators tailored to needs, IE, 10/21, p.196

Ajax Mfg. Co.:
Forging machine design, IE, 9/9, p.148

Alco Products Inc.:
Chamberlain: Exporter tells how you can succeed in foreign markets, 11/18, p.67
Contract for locomotives for Peru, 7/29, p.116
Ships locomotive to Greece, 11/18, p.66

Algoma Steel Corp. Ltd.:
Wide strip mill, Sault Ste. Marie, Ont., in production, 9/30, p.31

All-State Welding Alloys Co. Inc.:
High strength solder, IE, 11/4, p.165
Silver brazing flux, IE, 12/16, p.132

Allegheny Ludlum Steel Corp.:
Base prices cut on stainless plates, 12/16, p.31
Bright annealed sheets produced, Brackenridge 11/11, p.33
Continuous tungsten sintering furnace, TO, 12/23, p.16
Expands at Watervliet, electric melt furnace, vacuum equipment, etc., 8/5, p.31
L-D oxygen license, 8/19, p.52
Stainless (new) Type 211, strip form (applications), 9/9, p.29
Vacation plan, salaried employees, 10/7, p.28

Allied Chemical Co.:
Pure tungsten granules made by gas reduction, 'new metal,' 11/4, p.102

Allied Mfg. Inc.:
Buys Kenworth Mfg., B, 7/8, p.33

Allied Products Corp.:
Cold heading to form brake shoe cam, 7/1, p.13

Allis-Chalmers Mfg. Co.:
Buys Chamberlin Metal Products, B, 11/25, p.51
Buys Schwager-Wood, B, 7/29, p.35
Fuel cell to be tested in satellite orbiting 10/21, p.126
Gage control for Gray sheet-tin mill, 8/12, p.93
High flux isotope reactor for forge shop, 9/23, p.33
Mexican facilities, 12/9, p.51
Mexican plant gets giant kiln sections (cement-making), 8/19, p.35
Moisture resistant motor, IE, 11/4, p.160
Realigns industries group, 11/25, p.49
Vibrating screen (ore) destined for African mine, 11/18, p.132

Alroll Inc.:
Aluminum hot mill, Oswego, N. Y., 7/8, p.33

Altamil Corp.:
Buys Chambers Aircraft Div., B, 8/12, p.33

Aluminium Ltd.:
Aluminum joint tests predict performance of structures, 11/25, p.109

Aluminum Co. of America:
Alcoa Technical Center construction, 8/12, p.31
Anodized aluminum test at Alcoa Lab., 12/30, p.34
Announces basic policy change in distribution (marketing move may bring price stability), 11/25, p.45
Announces new alloys, high strength (X7106 and X5180), 12/9, p.49
Buys 2nd thin gage rolling mill, Warrick, Inc., Wks., 12/2, p.33
Commodity prices revised, 12/2, p.31
Harrison: How many new jobs in longer vacations? 8/5, p.25
Package design education program, 12/2 p.17
Salaried workers get vacation benefits, 9/2, p.27
Spotwelding aluminum to other metals, new process, 11/4, p.47
Trucktrailer roofing sheet extra wide, 11/18, p.114

Aluminum Extrusions Inc.:
Design seminar for customers, 8/12, p.109

American Demag Corp.:
Continuous steel casting machine for Armco, 11/18, p.93
Slab caster features ultralow platform, 8/19, p.31

American Gage & Machine Co.:
Buys LaBour, 10/28, p.31

American Gas Furnace Co.:
Continuous rotary furnace, IE, 10/14, p.233

American Hoist & Derrick Co.:
Buys Conveyor Co., B, 7/29, p.35

American Machine & Foundry Co.:
Amflex Dept. purchased by Pall, 11/4, p.51
Builds monorail system, license from France, 7/29, p.19
Buys Naval ordnance plant, York, Pa., 12/2, p.36
Buys Tuboscope B, 10/21, p.51
Enters monorail transportation field, B, 8/19, p.35
Growth of recreational products div., 9/9, p.62

American Metal Products Co.:
Buys No-Sag Spring, B, 10/7, p.36

American Metaseal Corp.:
Impregnation unit seals metal parts, IE, 11/4, p.164

American Monarch Machine Co.:
Air automatic stock feeder, punch press, IE, 9/2, p.128

American Motors Corp.:
Abernethy: Compact trend is just starting, 9/30 p.75
Annual report, profit sharing plan, 11/25, p.41
Stamping press for auto parts, 7/29, p.100

American Pullmax Inc.:
Unit shears, notches, punches holes, 10/14, p.234

American Sealants Co.:
Changes name to Loctite, B, 10/14, p.53
Liquid plastic for fitting metal parts (Navy use), 9/9, p.91

American Smelting & Refining Co.:
Computer bares secrets of quality (metal alloying), 7/29, p.90

American Solder & Flux Co.:
Rust preventitive 'Drygalv' improvements, IE, 11/11, p.124

American Super - Temperature Wires Inc.:
Ultrathin enameling coat on Teflon insulated wire, 10/21, p.121

Ametek Inc.:
Programed fatigue tester, Riehle Div., 10/28, p.25

Ampex Corp.:
Tape transport unit, IE, 12/16, p.139

Amsted Industries Inc.:
Pressure pouring process, licenses steel firms, 7/29, p.25
Pressure casting slabs, report, 10/14, p.151

Anaconda Co.:
Expansion at Columbia Falls, Mont., plant, 8/26, p.33

Anaconda Aluminum Co.:
Adds high cold rolling mills, Terre Haute plant, 8/19, p.35

Anaconda Wire & Cable Co.:
Reorganizing, 10/21, p.51

Anadite Inc.:
Buys Poly-Kote, B, 10/7, p.36

Anchor Alloys Inc.:
Buys two firms, B, 12/16, p.35

Anchor Coupling Co.:
Buys Eastman Atlantic plants, B, 8/19, p.35

Andrew Engineering Co.:
Tool machines from layout drawing, IE, 7/22, p.108
Vertical miller tracer equipped, IE, 10/28, p.100

Anocut Engineering Co.:
ECM machines, features, IE, 12/23, p.76
Electrolytic machines handle extra large parts, 7/22, p.29

Armco Steel Corp.:
Adds facilities at Middletown, B, 11/11, p.33
Amanda blast furnace lighted at Ashland, Ky., 10/28, p.32
Amanda has a thinner refractory wall, 12/23, p.15
Amanda—new blast furnace (Ashland, Ky.) is charged automatically, 12/9, p.108
Continuous casting unit, low level, planned for Butler Wks., 10/28, p.31
Continuous steel casting plant for Sand Springs, Okla., Sheffield Div., 11/18, p.93
Oxygen facilities new at Ashland, Ky., 12/2, p.31
Stainless alloy Type 300 new, 10/14, p.34
Stainless Type 300: Copper in stainless eases deep drawing, 10/28, p.52
Studies stainless slabs from Japan, 8/26, p.28
Water-hydraulic forging press, Baltimore Wks., 9/16, p.158

Alvey-Ferguson Co.:
Unit cleans, rinses (transmission housings), IE, 9/30, p.93

American Actuator Corp.:
Feeding system speeds squaring shear output, 9/30, p.45

American Brake Shoe Co.:
Denison Eng. hydraulic compact press, IE, 11/4, p.169
Denison Eng. vane type fluid motors, IE, 12/23, p.80
Tichnor, president of Drop Forging Assn., 7/1, p.41

American Can Co.:
Builds lab at Princeton, B, 8/19, p.35
Machine can produce 2000 cans per minute, 12/23, p.23
Research route to diversify markets, 8/12, p.31

Armstrong Cork Co.:
Polyurethane for cast tooling, 7/15, p.60

Aronson Machine Co. Inc.:
Adjustable height bases, integral types, IE, 9/9, p.149
Welding positioner, IE, 12/9, p.179

Arwood Corp.:
Makes copper investment castings, 11/11, p.31

Assembly Products Inc.:
Magnetic device checks hardness of moving strip, TO, 12/2, p.20
Temperature control adapts easily, IE, 9/30, p.97

Associated Metal Industries:
Wire mesh slings, advantages, IE, 10/14, p.243

Associated Spring Corp.:
European distributor, B, 11/25, p.49

Astrosonics Inc.:
Rate meter provides digital readout, IE, 10/28, p.102
Sonic energy for combustion efficiency (burners), IE, 7/29, p.152

Atlantic Steel Co.:
Buys Steel Tubing Sales, B, 10/21, p.51

Atlas Steel & Supply Co.:
Merges with Lederer, 9/16, p.203

Atlas Steels Co.:
Attacks U. S. special steels market, 10/7, p.88
Campaign to sell flat rolled stainless in world markets, opens plant in Tracy, Que., 12/9, p.46

Autoclave Engineers Inc.:
Isostatic press, IE, 11/8, p.138

Automation Industries Inc.:
Sperry Products: Ultrasonic inspection for production line, 11/18, p.90

Automatic Welding Co.:
Rotler-idler and sprocket rebuilder, IE, 10/7, p.141

Automotive Rubber Co.:
Permanent magnet grates end cleaning shutdowns, 9/23, p.54

Avco Corp.:
Enters metal spray equipment and supplies business, 9/16, p.162
Metallizing - spraying equipment, IE, 10/7, p.136

Avery & Saul Co.:
Division now corporate entities, B, 7/1, p.26

Avnet Electronics Corp.:
Diemaking process (Rapid Die), IE, 9/2, p.130

Avtron Mfg. Inc.:
Digital sheet length control, IE, 12/2, p.131

B

BTU Engineering Corp.:
Elevator hearth furnace, IE, 10/14, p.240

Babcock & Wilcox Co.:
Buys John Barnes Co., B, 11/25, p.51
Hoods recover converter heat for basic oxygen furnace, 9/30, p.50
Moves Refractories Div. headquarters, 7/1, p.26

Badall Co. Inc.:
Removable plugs on heat transfer rolls, IE, 12/30, p.74

Bailey Meter Co.:
Pneumatic computer controls strip tension, IE, 12/2, p.128

Baker Bros. Inc.:
Trunnion machines, arms for steering gears, IE, 12/2, p.128

Baldwin-Lima-Hamilton Corp.:
Awards contracts, extrusion presses in Japan, 12/30, p.25
Standard Steel: Vacation benefit tailored to give early retirement, 11/11, p.27

Balteau Electric Corp.:
X-ray units, improvements, IE, 11/11, p.119

Barber-Colman Co.:
Automatic sharpener, IE, 7/1, p.89
Furnace, flexible, cuts rejects (atmosphere, shuffle hearth) is on channel type skids, 12/16, p.88

Barnes Co., W. F. and John:
Axleshafts made on Barnes trunnion machine, IE, 9/30, p.97
Nests used in transferring parts, IE, 7/22, p.110

Barnes Drill Co.:
Machine hones brake drum parts, IE, 10/7, p.136
Unit automatic on boring, IE, 7/1, p.91

Bath Co., Cyril:
Stainless bumpers for Greyhound buses, 8/12, p.112
Stretch drawing tech., forming press automated, 7/22, p.43 and cover

Bauer Bros. Co.:
Centripetal classifier separates dry materials, IE, 10/21, p.194

Bausch & Lomb Inc.:
Accessories expand chart recorder ability, IE, 7/29, p.159
Fiber optics, uses, 7/8, p.65
Recorder fits standard racks, IE, 9/30, p.97
Strip chart recorder, sensitivity cited, IE, 12/16, p.130

Beardsley & Piper: See Pettibone Mulliken

Bearings Co. of America:
Approach to training unskilled workers to operate machine tools at new plant, Greensburg, Ind., 9/9, p.31

Beckman Instruments Inc.:
Buys Sharp Laboratories, B, 8/12, p.35
Nuclear instruments check quality, 9/23, p.98

Bedford Gear & Machine Products Inc.:
Vocational schools, 8/5, p.53
Features of centering and facing machine, IE, 12/16, p.129

Behr-Manning Co.:
Coated abrasive belts get smooth joints, IE, 9/23, p.98

Bell & Howell Co.:
F. D. Ryan (cover), instructural equipment, 10/28
Microfilm, prints in 25 seconds, IE, 8/5, p.102

Beloit Tool Corp.:
Taylor addressed Cutting Tool Assn. on tariff cuts, 7/8, p.29

Bemol Inc.:
Tungsten disulfide suspended in carriers, IE, 7/22, p.119

Bendix Corp.:
Filter assembly, gases-liquids, IE, 12/23, p.78
Gage (Sheffield) measures Polaris liner thickness, 7/8, p.29
N/C contouring system for tool changers (DynaPath-25), IE, 7/8, p.113
N/C contouring system, IE, 11/25, p.173
N/C for turret lathes, IE, 9/9, p.137
N/C system meets EIA-NAS standards, IE, 10/14, p.233
Scientific Group formed, B, 7/1, p.26

Beryllium Corp.:
Offers new alloy, Berylco Nickel 440, 9/30, p.45

Bethlehem Steel Co.:
Bar mill new, Johnstown plant, 9/2, p.27
Bickford succeeds Honeycutt, v. p.-sales, 9/9, p.26
Cort elected president, 8/5, p.29
Cromo-Co., hot work steel, IE, 11/11, p.116
Homer Research Lab, hot rolling mill installed, 8/5, p.31
Homer Research Lab., expands raw material research facilities, 12/16, p.31
Line pipe 42 in., Steelton, Pa., 12/2, p.36
Sells Quincy shipyard, B, 12/16, p.35
Structural column placed for new plant, Ind., 9/16, p.158
West Coast reorganizes, 8/12, p.135
West Coast studied, buys land in San Francisco Bay area, 9/9, p.33
Whitecollar vacation plan, 10/7, p.27

Binks Mfg. Co.:
Spray guns, IE, 12/16, p.134

Bishop & Babcock Corp.:
Buys Kaybar, B, 12/2, p.36
Buys Toledo Plastics, B, 8/5, p.32
Machining carbide solves galling problem, 12/9, p.107

Blair Iron Works:
Metallizing speeds piston repair, 9/16, p.168

Bliss Co., E. W.:
Inclinable presses, IE, 7/8, p.121
Press perforates strips of decorative aluminum, 7/22, p.31
Stamping press, AMC plant, for auto parts, 7/29, p.100
Vacation feature in USW pact, 10/7, p.28

Bliss & Laughlin Inc.:
4th quarter forecast, 8/5, p.17
Moves headquarters, 11/18, p.33

Blue M Electric Co.:
Vacuum oven heats fast, IE, 11/4, p.160

Boeing Co.:
Axial bulge forming cuts costs, 12/9, p.99
Fluorescent and ultraviolet test for inside tubes, 7/29, p.87
Turbine needs, 9/2, p.19
Wire thinner than hair welded with precision resistance welder, 8/19, p.53

Borg-Warner Corp.:
Collier: View government R&D spending, 8/26, p.25
Norge to make room air conditioners, 12/2, p.88

Borroughs Corp.:
Rumored to merge with Ford, 9/30, p.17

Botfield Refractories Co.:
Now subsidiary of: 9/9, p.35

Boyar-Schultz Corp.:
Deep hole drilling attach. to screw machine, IE, 7/22, p.110

Branson Instruments Inc.:
Conveyor attachment automates degreaser, IE, 10/14, p.236

Brew & Co, Inc., Richard D.:
Vacuum furnace does diverse work IE, 8/12, p.174

Brillion Iron Works Inc.:
Portable pyrometer gives fast heat readings, IE, 7/22, p.115

Bristol Brass Corp.:
Acquiring Noble & Westbrook, B, 10/7, p.36

Brown & Sharpe Mfg. Co.:
Hydrostatic spherical turning machine, IE, 10/14, p.238
Lo-Vis bearings for pumps, IE, 10/21, p.190

Brubaker Tool Corp.:
Climb milling, 7/22, p.52

Brunswick Corp.:
Spray-up manufacturing facility for Fiberglas panels, 10/14, p.49

Brush Beryllium Co.:
Beryllium alloy (1-400) new, 8/19, p.17
Improvements in beryllium alloys, IE, 11/4, p.160

Brush Instruments: See Clevite

Bryant Chucking Grinder Co.:
Double end internal grinder, IE, 7/22, p.109
Truing device key to grinder advantages, IE, 10/7, p.131

Budd Co.:
Buys nondestructive test business of Curtiss-Wright, B, 12/16, p.35
Licenses Swiss firm for gamma 9/30, p.103

Budd-Stanley Inc.:
Savings in value analysis between user and foundry, 9/9, p.91

Bunting Brass & Bronze Co.:
Air-operated clutch-brakes, IE, 9/30, p.103

Burgmaster Corp.:
Fast positioning tables for multi-position drilling, IE, 12/16, p.130
Turret drill features, IE, 7/15, p.111

Burroughs Corp.:
Computer as planning tool, 7/1, p.13
Management control systems (via computer), TO, 7/8, p.20

C

CBC Industries Inc.:
Solid state motor speed control, IE, 9/2, p.136

Calgon Corp.:
Coagulating aids for agglomerating, settling, IE, 7/29, p.150

California Steel & Tube:
Buys Ken-Ray, B, 12/23, p.25

Calstrip Steel Corp.:
New reduction strip mill, 12/2, p.33

Cameron Iron Works:
Vacuum steel producer, new vacuum melt shop, 8/5, p.30

Carborundum Co.:
Furnace heating elements take 3100° F, IE, 7/29, p.157
Pangborn facilities merged, 10/14, p.51
Refractory available in coating form, IE, 11/11, p.125
Thermistors stable, tiny, accurate, IE, 12/9, p.180
Urethane die blocks simplify forming press brakes, IE, 9/9, p.149

Careers Inc.:
Wanted: More engineer 'interdisciplinarians', 7/22, p.28

Carpenter Steel Co.:
Alloy combines strength, ductility (Pyromet 860), 11/25, p.176
303 stainless, improvements, IE, 11/4, p.170
Installs big vacuum furnace, 12/16, p.35
Invar for welding rod, 11/4, p.105

Carrier Mfg. Co.:
Vibrating hopper, IE, 10/28, p.98

Castle & Co., A. M.:
Huge rotary table surface grinder installed in Schaffer Grinding (associate), 7/8, p.72

Cayuga Machine & Fabricating Co.:
Two post frame on 1000 lb positioner, IE, 9/16, p.230

Cenco Instruments Corp.:
Acquiring Phoenix Precision Instrument, B, 9/16, p.57

Century Sales Corp.:
Gundrill, simplification, IE, 8/12, p.170

Chain Belt Co.:
Bids for Hanna Engineering, 7/29, p.31

Challenge Machinery Co.:
Truck operation manual, hydraulic lift, IE, 11/18, p.141

Char-Lynn Co.:
Hydraulic steering system, 12/9, p.158

Chase Brass & Copper Co.:
'Blue Dot' new free cutting brass rod for screw machine operations, 8/12, p.31
Rhenium (exotic metal) puts heavier burden on heat treating technology (space age use), 12/9, p.115

Chemetron Corp.:
Chemicals div. name change, B, 9/2, p.35

Chemical Corp.:
Conversion coatings, IE, 11/18, p.137

Cherry-Burrell Corp.:
Buys Arthur Colton, B, 11/25, p.51

Chicago Rivet & Machine Co.:
Air powered unit handles small rivets, IE, 9/9, p.146
Rivet setter, IE, 7/22, p.112

Chromalloy Corp.:
Antioxidation coating for TD nickel, 10/28, p.30

Chrysler Corp.:
1964 targets million cars, styling changes, international sales, 8/26, p.95
Builds stamping plant in Sterling Township northwest of Detroit, 12/9, p.51
Computer selection, 12 questions to answer, 7/8, p.29
Expands Kokomo transmission plant, B, 11/4, p.142
Local 412, whitecollar unit, wins U. S. training grant, 11/18, p.26
Marsh Screw amphibian built for Navy, 7/1, p.66

Cincinnati Milling Machine Co.:
Chucking grinder works 30 in. bearing rings, IE, 12/30, p.76
Tilting wheelhead on cutter-grinder, IE, 8/26, p.121
Tool changer featured on N/C machine, 10/7, p.131
Universal grinding machine, IE, 12/9, p.177
Wheel support triples grinder performance (TwinGrip machine), IE, 9/2, p.125

Clark Equipment Co.:
Air film system in car floor aids loading, IE, 10/28, p.105
Air pallet on market in kits, 11/4, p.117
Battery powered fork lift trucks for narrow aisle stacking, IE, 11/25, p.182
Buys Tyler Refrigeration, B, 11/4, p.51
Clutch for lift trucks, IE, 7/1, p.91
Lift truck attach. for sheet loading, IE, 8/5, p.104
Upright tilts on narrow aisle lift truck, IE, 7/29, p.156

Clarke Floor Machine Co.:
Total design approach halves packaging and shipping costs, 11/11, p.64

Clementina Ltd.:
Dry blast cabinet, IE, 7/29, p.159

Cleveland Instrument Co.:
Indi-Ron gage inspects roundness, concentricity, squareness, IE, 12/23, p.75

Cleveland Machine Controls Inc.:
Adjustable speed drives, IE, 11/25, p.181

Cleveland Vibrator Co.:
Tiny vibrator, IE, 9/2, p.137

Cleveland Worm & Gear:
Hellan Fluid strainers, IE, 9/30, p.103

Clevite Corp.:
Brush instruments surface analyzer, IE, 8/5, p.109

Clifton Hydraulic Press Co.:
Forming-forging press, IE, 12/2, p.131
Press sizes, 25 to 200 tons, IE, 11/25, p.178

Climax Molybdenum Co. of Michigan:
New mill (Coldwater), rolls refractory metal sheets, 7/22, p.56

Clipper Mfg. Co.:
Buys Air Placement Equipment, B, 9/23, p.35

Colorado Fuel & Iron Co.:
New operator may take over Wickwire-Spencer Buffalo plant, 7/15, p.18
Roll mill office digital control cards regulate new wide flange beam mill, 8/19, p.56

Combustion Engineering Inc.:
Buys Refractory & Insulation Corp., 8/5, p.32
Expansion plans and modernizing facilities, 9/9, p.33

Commercial Filters Corp.:
Moves headquarters, B, 7/1, p.26

Composite Industrial Metals Inc.:
Bonding process clads copper with thick solder coat, 9/23, p.31

Concast Inc.:
Agreement with TRW for casting machine computers, 12/9, p.46
Computers for continuous casting, 11/18, p.17
Slabs 100 by 17 in. may be cast continuously, 8/19, p.31

Cone Automatic Machine Co.:
PneumoDynamics may buy, 7/8, p.33; sale, 7/29, p.31

Connecticut Special Machine Inc:
Cryogenic process lengthens lift of tools, 11/4, p.47

Consolidated Aluminum Corp.:
Builds Miss. plant, B, 12/2, p.36
Competitor in aluminum, dedicates new reduction plant, Johnsonville, Tenn., 11/4, p.47

Consolidated Electrodynamics Corp.:
Modular used to build analog controls, IE, 10/28, p.102

Consolidated Metal Products Inc.:
Traveling punch, IE, 12/9, p.182

Continental Equipment Co.:
Plastic cladding, valve corrosion coat, 8/5, p.60

Continental Screw Co.:
Enlarges cold forming facilities, B, 7/22, p.32

Controls Co. of America:
Auto air conditioner sales triple, 7/15, p.81
Rotisserie turned by powerful clock motor, 9/16, p.154

Convair: See General Dynamics

Cooper-Bessemer Corp.:
Ceramic cutting tools, cover, 11/4, p.89

Cooper Weymouth Inc.:
Cradle - straightener, IE, 12/23, p.80
Stock reel-straightener, IE, 10/14, p.238
Straightener-feeder, IE, 9/2, p.130

Corning Glass Works:
Bendable glass in convertible tops, 9/16, p.146

Covel Mfg. Co.:
Optical comparators, IE, 12/9, p.182

Cross Co.:
Rotary index machine, IE, 12/23, p.79

Crucible Steel Co. of America:
Building bar mill, $6 million at Sanderson-Halcomb, 12/9, p.51
Expands Midland facilities - flat rolled steel furnaces, 11/18, p.33
New steel grades tested, oil hardening, carburizing, 9/23, p.59

Cummings & Sellers:
Cuneo: Know the pitfalls of government contracts, 12/9, p.49

Cummins Engine Co, Inc.:
Enters Common Market with agreement with German firm, 7/15, p.31

Curry Air Shear Corp.:
Air operated shear cuts ¼ in. steel, IE, 12/30, p.75

Custom Controls Co.:
Solid state switch, IE, 8/5, p.160

Cutler-Hammer Inc.:
Automatic mail sorter, 9/2, p.67
Fitzgerald, new president: Part supplier's approach to systems, 12/30, p.26
Paddle wheel conveyor mechanism stops, spaces trays, 10/28, p.106

D

Dahlstrom Mfg. Corp.:
Overhead trolley air distribution system, IE, 7/29, p.157

Danly Machine Specialties Inc.:
Adjustable stroke press, IE, 12/2, p.134
Hydraulic platen press molds plastic, IE, 12/30, p.74

Davis Gage & Engineering Co., A. G.:
Device gages grooves, bores, threads, shafts, IE, 8/26, p.120

Davis Machinery Co.:
Hydraulic power pack portable, IE, 9/30, p.100

Dayton Perforators Inc.:
PUPS—off shelf items: How standardization solves punch problems, 11/11, p.58

Dayton Steel Foundry Co.:
Buys Fayette Mfg., B, 10/21, p.51

De Florez Co. Inc.:
Positioner spots sheets for feeder, IE, 9/9, p.137

De Laval Turbine Inc.:
Acquired by Transamerica, B, 10/28, p.31
Buys Palmerweld Fabricating, B, 8/5, p.32

Delcon Corp.:
Phone scrambler prevents eavesdropping, IE, 9/2, p.133

Denison Engineering:
See American Brake Shoe

De-Tec-Tronic Corp.:
Gage, metal sheet thickness, IE, 9/2, p.128

Despatch Oven Co.:
Solid state controllers on tube type furnace, IE, 12/16, p.137

Detroit Broach & Machine Co.:
Broacher processes 1200 pistons per hour, IE, 10/7, p.132
Broacher uses short slab type tools, IE, 10/7, p.142
Hydraulic tracer converts lathe, IE, 12/30, p.75
Tracer lathe, third slide added, IE, 7/22, p.118
Tracer lathe for job lots, IE, 8/12, p.169

Detroit Hoist & Machine Co.:
Air powered unit 'Hoistractor', IE, 8/26, p.124

DeVilbiss Co.:
Airless spray gun, pump, IE, 8/12, p.175
Airless paint spray unit, IE, 12/2, p.132

DeVlieg Machine Co.:
High cycle tools speed high finish, 9/16, p.165
Horizontal boring-milling unit, closed loop servos, IE, 9/16, p.227

Di-Acro Corp.:
Tab notcher makes box corners, IE, 9/23, p.101

Diamond Chain Co. Inc.:
Buys couplings line from Farrel Corp., 10/21, p.51

Dickey Clay Mfg. Co., W. S:
Modernization-expansion program, B, 9/23, p.33

Die Components Corp.:
Attachment pares die maintenance costs, IE, 9/23, p.107

DoAll Co.:
Prototype of crystal wafering machine, IE, 9/23, p.107

Dodge Mfg. Corp.:
Drive components, IE, 7/15, p.110

Doehler-Jarvis:
See National Lead Co.

Doerr Electric Corp.:
Compact power transmission package, IE, 12/9, p.180

Dominion Bridge Co. Ltd.:
Revises pricing system, 12/9, p.140
Stacker crane in warehouse handles heavy structurals, 10/21, p.125

Dominion Electric Corp.:
Developmental marketing, making it pay off, 9/9, p.64

Dominion Foundries & Steel Ltd.:
Expansion program, facilities, B, 7/22, p.32
Silicon steel to be processed, 11/4, p.49

Dominion Steel & Coal Corp. Ltd.:
Consolidates operating groups, B, 9/2, p.35

Douglas Aircraft Co.:
"Freezing metals" speeds cutting rate, 11/11, p.31
New Space Systems Center, 11/25, p.49
Thin metals studied for re-usable orbital vehicles (coated foils), 12/9, p.122

Dow Chemical Co.:
Ammonium type cutting oil bactericide, IE, 10/21, p.192
Foam applied to packaging work, IE, 11/25, p.182
Space alloy marketing license 'Lockalloy', 9/2, p.33
Synthetic lubricant for rubber parts, IE, 7/1, p.91

Dravo Corp:
Builds four pelletizing plants, 8/19, p.66
Hot blast cupola for basic converters designed for Acme Steel, 9/23, p.59
Japanese steel mill contracts, 7/8, p.33
Shaking ladle for desulfurization of cupola iron, 9/16, p.146
Vacuum degassing (R-H process) argon injection, 9/16, p.138

Dreis & Krump Mfg. Co.:
Hydraulic Speeedibender, IE, 9/2, p.132

Drillmation Co, Inc.:
Boremation spindle ends scrap problems, IE, 10/7, p.138

Ducommun Inc.:
Buys Explosive Technology, B, 10/7, p.33

Du Pont de Nemours & Co, Inc., E. I.:
Continuous vacuum furnace processes refractory metals at Du Pont Metals Center, 9/9, p.85
High bake enamel, IE, 11/18, p.135
How it creates family of materials systems, 10/21, p.96

Dyer Co.:
Peephole gage checks thickness, IE, 10/28, p.101

Dyna Corp.:
Speed drive fitted to lathes, pumps, IE, 7/29, p.150

Dytronics Inc.:
Moves, B, 7/1, p.26

E

Easco Products Inc.:
EDM unit, power supply combine, IE, 7/29, p.156

Eastern Stainless Steel Corp.:
Pressure pouring process cost saver, helps meet foreign competition, 10/14, p.51

Eaton Mfg. Co.:
Merging with Yale & Towne, 10/21, p.49

Eco Engineering Co.:
Rotary vane pump handles chemicals, IE, 10/7, p.141

Economy Engineering Co.:
Automatic pointing machine, IE, 12/2, p.137

Efficient Industries Corp.:
Polyurethane tooling cast to shape, 7/15, p.60

Electric Products Co.:
Large induction motors, IE, 8/26, p.124

Electric Regulator Corp.:
7/22, p.110
Precise dc motor controls, IE, 7/22, p.110

Electro-Mechano Co.:
Drill press feed quickly installed, IE, 8/5, p.102

Electro-Nite Engineering Co.:
Flameproofed corrugated cardboard used as mold liner for hot tops, 11/25, p.98
Thermocouple lance, IE, 8/26, p.123

Electron Heating Corp.:
Electron beam evaporator-dual chambers, IE, 9/30, p.94

Electronic Associates Inc.:
Digital plotter, IE, 8/5, p.109

Electronic Specialty Co.:
Adhesive bonds quickly, 10/28, p.47

Elliott Inc., B.:
Production, toolroom lathes, IE, 7/1, p.84

Elox Corp. of Michigan:
EDM tool for small, precise work, IE, 10/14, p.236

Elwell-Parker Electric Co.:
Hot metal handler, IE, 11/18, p.136
Short turning lift truck, IE, 12/9, p.177

Englehard Hanovia Inc.:
Synthetic diamond grit, IE, 8/12, p.176

Engelhard Industries Inc.:
Resistance furnace for creep testing, IE, 10/7, p.136

Entech Corp.:
New name of Centech, B, 9/2, p.35

Enthone Inc.:
Licensed by Lockheed for two metal plating processes, (nickel plating and alkaline solutions) 8/12, p.112
Markets new gold plating Lockspray process, 7/22, p.29
Spray-gold plating, IE, 8/12, p.176

Epps Industries Inc.:
Sold, B, 10/28, p.31

Erie Forge & Steel Corp.:
Castings for huge hydraulic aluminum plate stretcher, 7/8, p.33
Union management committee approach, 10/21, p.47

Erie Malleable Iron Co.:
Melting furnaces installed, coreless induction, B, 9/16, p.55

Eriez Magnetics:
Device removes magnetic materials, IE, 12/23, p.79

Eutectic Welding Alloys:
Filler metals for Tig welding stainless, IE, 8/26, p.120

Everett Industries Inc.:
Abrasive cutoff machine, IE, 10/7, p.133
Unit cuts shapes, solids quickly, IE, 7/1, p.92
Unit cuts steel rail, IE, 8/5, p.104

Excel Industries Inc.:
Components, services for diecasters, IE, 12/2, p.138

Ex-Cell-O Corp.:
Grinding wheel dresser makes deep cuts at steep angles, IE, 10/7, p.139
Negotiating for Micromatic Hone, 9/9, p.35
Power elevation unit for contour projector, IE, 8/12, p.170
Standard unit drills at close center distances IE, 10/28, p.105
Three way machine with six station capability, IE, 8/26, p.120
Transfer machine processes auto transmission cases, IE, 8/19, p.110

Exomet Inc.:
Exothermics: Pot boils with new ideas, 8/26, p.60
Exothermic welding kit, IE, 11/4, p.160
Thermomold disintegrating hot top material, 11/25, p.98
Thermomold, new idea for ingot hot tops, IE, 10/14, p.234

Eyelet Tool Co. Inc.:
Riveting machine, IE, 9/2, p.135

F

FMC Corp.:
Fixture mated to N/C turret drill (Cintimatic), 12/16, p.76

Fafnir Bearing Co.:
Forms West German firm, B, 7/8, p.33
Pillow block allows for shaft expansion IE, 10/14, p.237
Seal added to bearing keeps out dirt, IE, 11/11, p.122

Fairchild Stratos Corp.:
Adhesive bonded joints in turboprop transport, 12/30, p.29

Falls Industries Inc.:
Carbon cloth, IE, 9/2, p.134

Fannon Products: See Hupp

Fansteel Metallurgical Corp.:
Purification system recovers hydrogen, 8/12, p.108

Fawick Corp.:
Clutches transmit high torque loads, IE, 12/16, p.136
Two-way solenoid valves, IE, 12/30, p.76

Fenn Mfg. Co.:
Payout on N/C equipment, 11/18, p.29

Fenway Machine Co. Inc.:
Nibbler slices 10 gage stainless, IE, 8/19, p.110

Ferguson Machine Co.:
Reducer, small size, IE, 7/1, p.88

Ferro Corp.:
Ceramic inorganic pigments, IE, 12/2, p.137

Fiat Motor Co.:
Builds in Nigeria, 7/1, p.74

Firth Cleveland Steels Ltd.:
Ward Steel named distributor, 9/9, p.33

Fisher Governor Co.:
Dual spin on boring mill (forming spherical stainless balls valves), 10/7, p.78

Fisher Scientific Co.:
Transistor relay for heavy duty, IE, 8/12, p.174

Fluid Controls Inc.:
Testing device accurately checks dry seal pipe threads, IE, 12/9, p.184

Ford Motor Co.:
1964 capital expenditures $510 million 12/23, p.14
4th quarter output target high, Iacocca predicts, 9/16, p.209
Air cylinder and valve redesign saves million in just one plant (L. J. Burza), 12/30, p.30
Allegro (pic) car of future, World Fair, 9/9, p.130
Automatic data processing in personnel management, 10/7, p.33
Electrocoating process may be used in Wixon, Mich., plant—bypassing galvanized steel and zinc primers in auto bodies, 7/8, p.25
Engineers queried on material needs, 7/22, p.85
Fiberglas uses (drag racers, sports models), 11/4, p.142
Flexibility, simplicity in design (Patterson), 11/25, p.156
Henry Ford: Tax cut deferral, 7/15, p.17
Racing cars at Indianapolis, 7/8, p.94
Ranchero styling, pic, 9/16, p.210
Sports car to resemble experimental Cougar, 12/30, p.59
Telemetry system records data on strip mill, 8/12, p.110
Torsion springs from Japan, 9/2, p.110

Ford of England:
Raviolo predicts stratified charge powerplants, 12/9, p.158

Fort Wayne Tool & Die Inc.:
Buys Crown Tool, B, 8/12, p.33

Fortune Industries:
Tumbling, deburring media, IE, 8/12, p.179

Fosdick Machine Tool Co.:
Automatic jig borer ends scrap losses, 11/4, p.93

Fostoria Corp.:
Buys Associated Valve, B, 8/12, p.35

Foxboro Co.:
Chromatographic analyzer, IE, 8/12, p.176
Expands international network, 8/5, p.31

Foundry & Metallurgical Equipment Ltd.:
Mobile ladle mounted on walkie type chassis, transports molten aluminum in foundries, 11/11, p.75

Fuel Cell Corp.:
Unit powered by gas, typewriter size, developer Dr. Schultz, 10/28, p.29

Fuji Iron & Steel Co.:
Automated weighing, trims manpower, 7/22, p.51

Furane Plastics Inc.:
Polyurethane foam, slow rising, insulates, IE, 8/26 p.120
Uralane resins, IE, 8/12, p.172

Fusion Inc.:
Automatic silver brazing machine, 12/16, p.77
New name for Fusion Eng., B, 7/15, p.35

Futurmill Inc.:
Structural steel beam and column mill, IE, 8/19, p.114

G

GKN Steel Co.:
LD/AC converter at Sysaght's Scunthorpe Wks., 7/8, p.101

Gardner-Denver Co.:
Production Machine: Hand tool route to automation, 11/11, p.56

Garringtons Ltd.:
Dual fuel best for forging billets, 8/26, p.29

Gas Atmospheres Inc.:
R & D plans broadened, 8/26, p.33

Gasalloy Steel Corp.:
Steel diffusion coating of chromium, new process, 7/15, p.54

Gates Radio Co.:
Aluminum dimpling problems solved, 7/22, p.52

Gauge Inc., L. A.:
Silicon carbide grinding tip, 9/16, p.132

General Actuators Co.:
Multispeed drive, IE, 10/28, p.104

General American Transportation Co.:
Buys Buckeye Pipe, B, 10/28, p.32
Optional mixer seal, IE, 10/28, p.104
Parker-Kalon: Screws fed, driven automatically, 8/19, p.54

General Automation Mfg. Inc.:
Magnetic base on portable drill presses, IE, 11/18, p.140

General Dynamics Corp.:
Atomic fusing an aim, 8/26, p.55
Buys Bethlehem shipyard, 12/23, p.24
Computer translates data, IE, 12/23, p.76

General Dynamics/Astronautics:
Buys machined parts 0.0000005 inch from Taylor Devices, 7/8, p.58
Explosive forming tube bending, chem milling missile fuel lines (cost saving), 7/29, p.88

General Dynamics/Convair:
'Instant' blanking methods (rubber pad) shortcut conventional costs, 12/9, p.105

General Electric Co.:
Aluminum lubricant licensed to Houghton, 7/29, p.31
ADAPT, computer programs machine tools, 9/23, p.31
Arbitration point won in new IUE contract, 10/7, p.27
Auxiliary Arithmetic Unit for 235 computer, 9/16, p.146
Borch elected president, 10/14, p.49
Computer communication system, IE, 7/8, p.115
Computer system, IE, 7/1, p.87
Computer-transistorized units, aim at replacement market, 12/23, p.24
Cordiner: Timing is mark of good manager, 9/23, p.26
Device reads coded data on packages, IE, 11/18, p.141
Electric toothbrush, nickel-cadmium battery, 7/8, p.55
GE integrated automation system, information systems at Meter Dept., Somersworth, N. H., 8/12, p.90
Insulating material (mica mat) fights flame, 12/9, p.124
Labor bargaining with IUE starts, 8/5, p.26
Labor contract readied, 8/26, p.27
Magnetic-tape transmits data between computer locations, 8/12, p.171
Metals copies from rubber molds, Silicone Dept., 8/19, p.55
Miller: Steel industry automation—where do we go from here? 8/26, p.56
Nimbus assembly: How to get your products into orbit (cover), 7/29, p.79
Photoelectric unit, light source—receiver, IE, 8/5, p.100
Price hike on steel mill equipment, 10/21, p.49
Radio-mobile works in UHF channels, IE 8/26, p.123
Selling two steel plants, Mahoning Valley and Conduit Dept., 10/28, p.19
Silicone fluid gives rust resistance to metal surfaces, 8/12, p.172
Dr. Suits: Predicts fuel cell car, 8/12, p.17
Synchronous induction motor runs at 75 rpm, IE, 8/19 p.117
Tantalum refractory alloy (new) for hi temp use, 12/16, p.29
Two-way radio Voice Commander, IE, 10/28, p.99
Welding CO_2 units for home furnace heat exchangers, 11/25, p.103
Welding control bonds, IE, 8/5, p.104
X-ray spectrometer 90 sample changer, IE, 7/15, p.113

General Industries Co.:
Neoprene-duck packing rings cut maintenance costs, 12/9, p.130

General Instruments Corp.:
Mobile whiteroom, cleaning unit, IE, 11/4, p.169

General Magnaplate Corp.:
Buys Pyro Metal Finishers, B, 8/19, p.35

General Motors Corp.:
"A" body design, 12/23 p.63
AC Spark Plug Div.: Powder plus extrusion equals duplex electrode, 12/16, p.82
Cadillac-P. W. Maurer: Look for more sophisticated lighting systems, 11/4, p.141
Chevrolet: Fasteners engineered, 11/25, p.155
Chevrolet's Knudsen forecasts car and truck sales, 9/2, p.109
Chevrolet's truck model-Econoline, 12/2, p.110
Decentralization, how much? 10/28, p.77
Fisher Body: cast aluminum shell for bucket seats, 9/30, p.18
Fisher Body: Tig spotweld units on production line, 10/21, p.123
Grand Prix readied by Pontiac, sports car, 9/16, p.210
Jacoby explains depth in management (rating systems), 7/1, p.65
Transportation is matter of balance: Gordon, 11/11, p.98

Geometric Tool Co.:
Slim Jim Precisionaire gage, (chaser blanks), 7/8, p.65

Gerlinger Carrier Co.:
Lift truck, 16,500 lb loads, IE, 8/26, p.114

Getman Bros.:
Dual control, fork truck, IE, 11/18, p.138

Giannini Controls Corp.:
Pressing, staking units, combined, IE, 12/16, p.139

Gibsonburg Lime Products Co.:
Magnesia (calcined dolomite) added to slag gives longer furnace life, 10/21, p.115

Giddings & Lewis Machine Tool Co.:

Milling machine for heavy cuts, IE, 11/25, p.173
N/C system, light shows malfunction, IE, 7/8, p.121

Girard Associates:
Lathe at Milan Show, 8/26, p.117

Gisholt Machine Co.:
Buys Parker Pen's interest in Janesville, Wis., facility, 7/8, p.33

Glassoloid Corp. of America:
Press laminates plastic onto charts, nameplates, IE, 7/15, p.114

Gleason Works:
Machine cuts straight bevel differential gears, IE, 12/23, p.77

Globe-Wernicke Industries Inc.:
Buys Weis Mfg., B, 7/29, p.35

Goodyear Tire & Rubber Co.:
Garrett: How to stretch your rubber goods dollar, 7/8, p.59
Machine for testing giant industrial belts air springs cut vibration, 7/15, p.18
Predicts two ply tire, 11/11, p.98
Steam hose, IE, 8/26, p.114

Goss Gas Inc.:
Wrap-around torch simplifies soldering, IE, 9/16, p.229

Graham Transmissions Inc.:
Miniature speed drive, IE, 11/4, p.162

Gra-Iron Foundry Corp.:
Centrifugal wheel blast cleaner for core knockout, three benefits, 12/23, p.31

Grand Sheet Metal Products Co.:
Riveting vinyl-metal laminates, 12/16, p.81

Great Lakes Steel Corp.:
Computer controlled strip mill turns out hot bands, 10/20, p.30
Continuous record of elongation per pass, digital measuring system, 11/25, p.100

Greenlee Bros. & Co.:
Buys Rockford Machine Tool, 9/30, p.31
Transfer unit locates electrical failure, IE, 12/23, p.78

Gregory Industries Inc.:
Cable installation a way to save, IE, 10/21, p.196

Grigg Hydraulics Ltd.:
Hydraulic steering system, aimed at heavy vehicles, 12/9, p.158

Grinding & Polishing Machinery Corp.:
Snagging grinder drive variable, IE, 11/11, p.125

Grinnell Co.:
Bargain hunters ambush sellers of quality welding: Helmut Thielsch, 7/22, p.48

Grob Co., Ted:
Unit grinds points on 1/16-1 in. drills, IE, 9/30, p.100

Grove Valve & Regulator Co.:
Valve aids in simulating conditions on moon, 11/11, p.69

Gulton Industries Inc.:
Gage measures liquid in tank by 'listening,' 8/19, p.18

H

H & H Engineering Co.:
Draw type tube bender, prepunched discs, IE, 9/2, p.131

HJS Engineering Co.:
Machine marks round, conical parts, IE, 9/16, p.232

Hacker & Co., Inc., William J.:
Automatic microtome for preparation of metallurgical samples, IE, 12/16, p.134

Hagan Controls Corp.:
Stainless flex tubing licks meter problem, 7/22, p.54

Hailer Inc.:
Supplies Ford for powder metal transmission parts, 12/2, p.110
Testing unit, IE, 8/5, p.107

Hallicrafters Co.:
Two-way radios, IE, 10/28, p.102

Haloid Corp.:
Correction on purchase (Xerox, not Haloid), 7/8, p.31

Hamilton-Pax Inc.:
Thread roller unit on bar machine, 9/16, p.161

Hamilton Standard Div.
See United Aircraft

Hamilton Watch Co.:
Commercial heat treating section, new market area, 7/15, p.56
Expands photoforming plant (tiny parts made from metal foils), 9/9, p.96
Permanent magnet alloy fits miniaturization, IE, 11/4, p.164

Hammond Machinery Builders Inc.:
Fixture boosts electrolytic grinding efficiency, 8/19, p.55
Flat finishers handle coils, flat pieces, IE, 12/16, p.134

Hanchett Mfg. Co.:
Buys Raydyne, B, 7/29, p.35

Hanna Engineering Co.:
Chain Belt may purchase, 7/29, p.31

Hannifin Press Co.:
Compact hydraulic press, IE, 12/2, p.134
Open gap hydraulic press, IE, 7/29, p.157

Hanover Instrument Co.:
Formed, B, 8/26, p.35

Hanson-Van Winkle-Munning Co.:
Noncyanide barrel zinc plating process, 12/23, p.23

Harig Mfg. Corp.:
Optical comparator for grinder, IE, 11/25, p.178

Harnischfeger Corp.:
Discontinues output of diesel engines (facilities for sale), 12/16, p.33
Electrical Products Div. formed, 8/12, p.111
Giant machine tape controlled, 11/18, p.35
Heavy duty TCH ac welders, IE, 9/2 p.137
Improved ac-dc welder for production work, IE, 8/19, p.110

Harris-Intertype Corp.:
Buys Schriber, B, 9/23, p.35

Harris Mfg. Co.:
Chilling machine processes metals, IE, 9/30, p.100

Harvey Aluminum Inc.:
Magnesium plant planned for Port Angeles, Wash., entering magnesium field, 12/2, p.29

Harvill Machine Corp.:
Form, cam grinder holds 0.0003 in. tolerance, IE, 9/30, p.100

Hauserman Co., E. F.:
"Snap-on" metal walls, research done by Tishman, 9/2, p.69

Havir Mfg. Co.:
Press-Rite combined with Auto-Press, IE, 10/28, p.101

Hayes, C. I.:
Graphite felt insulation for furnace, 12/16, p.77

Hays Corp.:
Flowmeter measures liquids, IE, 9/9, p.139

Heald Machine Co.:
Controlled Force (CF) grinding: Control of wheelhead feed force aids precision grinding, 9/30, p.42
Plug-A-Cycle changes machine cycles in grinders, IE, 7/8, p.116

Heidrich-Nourse Co.:
Pneumatic staking press, IE, 12/2, p.135

Hendrick Mfg. Corp.:
Tri-Rail saw, IE, 7/15, p.114 and 8/26, p.117

Heresite & Chemical Co.:
Resin coating for steel heat exchangers, 7/22, p.56

Herman Inc., A. Dale:
Vacuum ovens double as space simulators and vacuum furnaces, IE, 8/19, p.112

Hill Acme Co.:
High production threading of pipe couplings on automatic tapping machine, IE, 8/26, p.117
Shear swivels to miter flats, IE, 10/28, p.103

Hill Inc., Walter P.:
N/C transfer machine, IE, 12/16, p.130
N/C unit for small, medium production, IE, 8/5, p.99

Hirschmann Corp.:
Pivot polisher, IE, 7/22, p.119

Hobart Bros. Co.:
Welding equipment problems traced to electrode wire, B, 12/30, p.16

Hoffman, McKinsey & Co.:
Why vice president-marketing concept often fails, 7/8, p.18

Hofmann Engineering Co.:
Sexless coupling, quick disconnect, IE, 11/18, p.135

Holcroft & Co.:
Aluminum annealing furnace, 11/4, p.97

Honeywell:
Bolander: Why oxygen converters need computer control, 7/1, p.43
Electronic temperature controller, IE, 11/4, p.164
High limit controller tests self continuously, IE 8/12, p.179
Testing space materials (cover), 7/1, p.32

Hooker Chemical Corp.:
Parkerizing 100 — phosphatizing system, 11/25, p.97

Hoover Ball & Bearing Co.:
Foreignmade items must be marked, 7/32, p.30

Houghton & Co., E. F.:
Black oxide solves discoloring problem on chokes for shotguns, 9/16, p.150
High flash type rust preventive, IE, 10/21 p.197
Lube for high temp. use, IE, 8/26, p.122
Markets new aluminum cutting oil (Cut-Max 570) and aluminum lubricant (Cindol), 7/29, p.31
Plastic coating for tubing reduction, IE, 11/18, p.134
Water soluble alkaline cleaner for ferrous metals, 9/9, p.87

Howe Refining Co.:
Forms Master Alloys, 10/21, p.51

Howe Sound Co.:
Aluminum alloy developed (H-185), 12/30, p.24
Curing process of plastic chrome refractories for furnace door linings, 9/30, p.45
Howe Sound Aluminum Div., $5 million expansion, help from Pechiney (France), 7/8, p.30

Hughes Aircraft Co.:
Buddenhagen: Six thresholds for laser applications, 12/30, p.33
Research center for infrared technology, 7/15, p.35

Hunter Mfg. Co.:
Buys Stratton Equipment, B, 9/16, p.57

Hupp Corp.:
Buys Richards-Wilcox, B, 10/7, p.36
Fannon designs gas fired preheaters for diecasting, 7/8, p.94

Hysol Corp.:
Epoxy adhesive holds hard-to-bond materials, IE, 8/12, p.173

Hyster Co.:
Self-cleaning radiators designed for lift trucks, 11/4, p.120

I

IBM World Trade Corp.:
Watson (addresses foreign trade convention): Free world may be poised for return to nationalism, 11/25, p.43

Illinois Tool Works Inc.:
Forms Advanced Gear Engineering Group, consultation service, 9/9, p.35

Imperial Electric Co.:
Buys motors line from Fairbanks, B, 8/19, p.35

Improved Machinery Inc.:
Plastic bags, disposable chambers for welding titanium, 7/22, p.29

Indiana General Corp.:
Moves headquarters to Chicago, 10/28 p.32
Portable permanent magnet testers, IE, 7/15, p.112

Induction Heating Corp.:
Moving to Warren, Ohio, as div. of Taylor-Winfield, 12/9, p.53

Industrial Machinery Co. Inc.:
May buy Wichita Industrial, B, 12/16, p.35

Industrial Magnetics Inc.:
Magnetic gage base, IE, 10/7, p.132

Industron Corp.:
Induction heating generators, IE, 10/7, p.138

Infra-Red Systems Inc.:
Infrared oven, teflon - fiberglas belt, IE, 7/29, p.160

Ingersoll-Rand Co.:
Dry air, package concept, IE, 8/12, p.172
Japanese subsidiary formed, B, 9/2, p.35

Inland Steel Co.:
Builds iron ore pelletizing plant, Wis., 10/28, p.31
Expansion program, second phase, 7/8, p.31

Illinois Tool Works Inc.:
Shakeproof: Drill, tap, fasten in one operation, 10/7, p.76

Inseo Corp.:
Electric control of outputshaft speed on gear motors, IE, 7/1, p.87

Instrument Development Laboratories Inc.:
Automatic measurement of process colors on line, 11/18, p.134
Continuous color measurement device, IE, 8/5, p.105

International Basic Economy Corp.:
Invests in German firm, 7/1, p.73

International Business Machines Corp.:
Air or hydraulic fluid computers, 9/2, p.80
Communication control system (7740) for messages and information, 7/29, p.102
Computer-1401-G, punched card accounting, IE, 10/21, p.189
Data cartridge reduces transcription errors, 8/12, p.110
Disc storage unit, IE, 11/11, p.116

International Harvester Co.:
Acquires assets of Solar Aircraft, now Solar Div., 9/16, p.57
Engine cylinder block line new, numerical control, Melrose Park, 7/15, p.29
Expansion plans, motor truck assembly plant at Springfield, O., Wks., 9/30, p.31

International Nickel Co. Inc.:
Cooling bed to handle round billets, 8/12, p.108
Inco study shows 50% casting gain by 1971, 9/9, p.28
New uses for nickel (Gordon cover pic), 7/8, p.55
Sales of gray and ductile iron castings, 9/2, p.17

International Railroads Weighing Corp.:
Electronic scale records individual freight car weights, 12/9, p.116

International Resistance Co.:
Metal Glaze, new resistance element material, 8/26, p.29
Powell: Personnel managers getting out of stream of management, 10/14, p.43
Solid state transducer measures pressure works at 800° F, IE, 10/21, p.197

International Ultrasonics Inc.:
Monoflow flowmeter, IE, 11/4, p.162
Tank levels checked by ultrasonic pulse, IE, 9/16, p.234

Ipsen Industries Inc.:
Box furnace heads loads of large parts, IE, 8/19, p.114
Develops foamed metals for spacecraft, 8/26, p.31
Furnace, controls features, IE, 12/9, p.181
Furnace cools by forced gas, oil quenches, IE, 8/19, p.109
Vacuum furnaces, foamed metals, ceramics on display, 10/14, p.235

J

Jacinto Steel Corp.:
To operate Philippines steel mill, 7/8, p.17

Jaco Mfg. Co.:
Compact injection molder, IE, 12/9, p.182

Jackson County Iron Co.:
Builds iron ore pelletizing plant, Wis., 10/28, p.31

Jetrow Co.:
Hydraulic, portable elevator, Jet-Lift, IE, 9/30, p.102

Johansson Gage Co., C. E.:
Beam interferometer accurate on surface measurement, IE, 11/11, p.118

Johns-Manville:
Dyna - Quartz silica insulating fibers, IE, 7/22, p.120
Oil seal resists temperature, pressure, 8/12, p.171

Johnson Machine Co., Carlyle:
Electric clutch, speed increase, IE, 8/5, p.100

Jones & Lamson Machine Co.:
Tool lease plan, 7/22, p.30

Jones & Laughlin Steel Corp.:
Adds facilities to Cleveland plant, 12/9, p.51
Avery obit, 12/16, p.27
Beeghly: Forecasts '64 steel consumption, 12/30, p.13
Big Susan blast furnace feeds voracious converters, 12/23, p.34
D-H vacuum degassing unit, 10/21, p.33

Jones Metal Products Co.:
Hydroform installed, pic., 8/12, p.29

Jones Shovel Co.:
Merges with Welland Valve, B, 7/29, p.35

Joy Mfg. Co.:
Applies for license to export potash mining equipment to Soviets, 7/8, p.18
Compressor package, IE, 11/25, p.180
Holder saves used tungsten carbide tools (no throw-away), 9/9, p.31

K

K-D Mfg. Co.:
Low cost lift truck, IE, 12/16, p.132

Kaiser Co., Henry
L-D process license for Allegheny Ludlum, 8/19, p.52

Kaiser Aluminum & Chemical Corp.:
Aluminum alloy (7039) new for ultracold jobs, 8/26, p.31
Aluminum in cans, increase predicted, 9/9, p.91
Aluminum line to process can stock, 12/23, p.24
Builds wire and cable plant, Ala., 10/7, p.33

Kaiser Aluminum International Inc.:
Buys interest in Thailand firm, B, 9/23, p.35

Kaiser Engineers:
L-D oxygen-McLouth case starts, 10/21, p.34, incorrectly reported Kaiser Steel, 10/28, p.19

Kaiser Refractories:
Price increases, 7/1, p.48

Kaiser Steel Corp.:
Annual study on Western States steel consumption, 9/16 p.53
Iron ore pellets supplied Japanese steel industry, 12/9, p.44
Modernizes electricweld pipe mill, 12/30, p.25
Oxygen supply boosted with Linde on-site plant, 7/22, p.31
Pipe facilities enlarged, Napa, Calif., (to make larger pipe), 10/21, p.49
Progress Sharing, six months progress report, 10/14, p.45
Swedish joint venture, B, 7/15, p.33
Union employees get bonus, 7/8, p.31

Kaman Aircraft Corp.:
Broaching ends spar machining problem, 9/16, p.165
Buys AviDyne Research, B, 12/2, p.36
Oxygen analyzer, IE, 10/21, p.195

Kaufman Mfg. Co.:
Hydraulic tapping machine, IE, 7/29, p.154

Kawasaki Steel Corp.:
Automation advances information system at Japanese slabbing mill, 9/9, p.93

Kawneer, Co.:
Buys Railcraft, B, 11/25, p.51

Kaydon Engineering Corp.:
Ball bearings 2 to 14 ft in diameter, IE, 7/8, p.116

Kearney & Trecker Corp.:
Automation adds jobs, 9/2 p.18
Series of knee type milling machines, 7/29, p.149
Special cuts column machining time, 9/16, p.55

Kennecott Copper Corp.:
New process for sponge iron production, 7/15, p.31
Vertical drill installed at Bingham, Utah, 10/28, p.32

Keystone Drawn Steel Co.:
Merged, B, 9/30, p.31

Keystone Engineering Co.:
Compressor transfers corrosive gases, IE, 9/2, p.126

Keystone Lubricating Co.:
Additives in lube rust preventive, IE, 8/26, p.123

King-Seeley Thermos Co.:
Almco vibratory finisher, features, 9/30, p.97

Kirkhill Rubber Co.:
Boot life boosted for hydraulic presswork, 9/16, p.153

Koehring Co.:
HPM diecasting machine, IE, 9/2, p.135
HPM Div. press straightens malleable iron castings, IE, 8/19, p.116

Kolene Corp.:
Molten salt bath unit, descales stainless strip, IE, 10/28, p.102

Kollmorgan Corp.:
Optical instruments still imported, 7/1, p.25

Koppers Co. Inc.:
Enters reinforcing plastics field, 7/15, p.33
Installs scalefree rotary hearth billet heating furnace at its forging plant, B, 7/29, p.35
Strategic-Udy smelter (iron making), for Venezuela, 7/15, p.31

Korad Corp.:
20 joule ruby laser detector, IE, 12/2, p.138

Kucera & Associates:
Stereo records contours, photogrammetry, 12/16, p.76

L

L & R Mfg. Co.:
Ultrasonic cleaners scrub tiny parts, IE, 7/8, p.117

Lake City Inc.:
Industrial timer assembled from kit, IE, 10/21, p.198

La Salle Steel Co.:
Buys Keystone Drawn Steel, 9/30, p.31

Latrobe Steel Co.:
Vacuum steelmaking system unveiled, called Therm - I - Vac, 12/2, p.31
Vacuum melt system highly flexible, 12/9, p.110

Lear-Siegler Corp.:
Automatic jig borer ends scrap losses, 11/4, p.93
Fluid coupling weighs less than 2 ounces, IE, 7/1, p.88
Wet running centrifugal pump for fuel booster, IE, 7/29, p.152

LeBlond Machine Tool Co.:
Metal removal, 10.6 in. per minute, 7/29, p.87

Lederer Iron & Steel Co.:
Merged with Atlas Steel & Supply, 9/16, p.203

Leeds & Northrup Co.:
Recorder plots heat, etc., IE, 7/15, p.116
Recorder, Speedomax, IE, 10/21, p.194

Lees-Bradner Co.:
Switch to leaded steels in worms, gears, benefits, 9/9, p.89
Taper thread milling machine, IE, 12/2, p.127

Leiman Bros. Inc.:
Combined pump, motor, IE, 10/28, p.101

Lennox Tool & Machine Builders:
Machine designed for numerical control, IE, 11/4, p.164

Lenox Instrument Co.:
TV camera, borescope inspection, IE, 10/21, p.195

Leonard Precision Products Co.:
Flanging unit cold forms in one step, IE, 12/16, p.139

Lewis Machine Co.:
Machine cuts bar shapes to 7/8 in., IE, 7/29, p.159

Lewis-Shepard Products Inc.:
Straddle, hydraulic footlift truck, IE, 11/4, p.166

Lexco Engineering & Mfg. Corp.:
Hydraulic lift table, IE, 7/22, p.116

Lima Electric Motor Co. Inc.:
Four speed drive, IE, 12/23, p.77
Four speed drive tailored to OEM, IE, 8/19, p.115

Lincoln Electric Co.:
Design changes on welding unit pares cost, IE, 11/11, p.117
Incentive bonus, 12/16, p.17

Lindberg Engineering Co.:
Horizontal cold wall furnace, IE, 11/4, p.159
Steam tempering furnace also handles nitriding, 8/12, p.171
Temperature uniform on semiconductor furnace, IE, 10/21, p.192
Vertical scanner heat treats shafts, IE, 7/8, p.115

Linde Co.:
Cooled roofs may save steelmen buck a ton: Thomas Milhaupt, 12/9, p.96

Ling-Temco-Vought Inc.:
Metal fatigue tests for Mach 3 structures, 11/11, p.74

Link-Belt Co.:
Buys interest in Italian firm, B, 7/29, p.33

Litton Industries Inc.:
Buys Adler Electronics, B, 10/7, p.36
Thornton suggests way to cut R&D overlap, 9/9, p.28

Lockheed-Georgia Co.:
Arcspot for fastening locator brackets on jigs and fixtures, 12/9, p.117

Lockheed Missiles & Space Co.:
ADA (automatic data acquisition), new management tool, 8/26, p.58
Fiber composite new (inorganic bonding), 11/25, p.47
Materials for 1970s and '80s developed, 12/2, p.20
Metal plating processes new, licensed to Enthone, 8/12, p.112
Space alloy 'Lockalloy' licensed to Dow Chemical, 9/2, p.33

Loctite Corp.:
Liquid locking tech. for bronze bearings, 12/9, p.107
Retaining compound bonds fitted parts, IE 12/9, p.178
Was American Sealants, B, 10/14, p.53

Lodge & Shipley Co.:
Special three roll Floturn shear spins long missile fuel tubes, 12/9, p.47

Loftus Engineering Corp.:
Waste gas cleaning systems for basic oxygen furnaces, 8/19, p.58

Loma Machine Mfg. Co. Inc.:
Automatic (Lomatic) machine in bar mill, 10/7, p.33
Strain gages applied to rolling mills, IE, 9/2, p.133

Loopco Industries Inc.:
Floor level coil car combines peeler, flattener, drive, IE, 7/15, p.115

Lors Machinery Inc.:
Butt welding unit for spotwelders, IE, 8/12, p.179

Loud Machine Works Inc., H. W.:
Sold, B, 9/9, p.35

Ludlow Corp.:
Chemically treated paper protects metals, IE, 10/21, p.199

Luria Bros. & Co. Inc.:
Russian casting method, interest purchased, 8/19, p.31

Lynchburg Foundry Co.:
Shaking ladles installed (European tech.), 9/16, p.143

Lysaght Ltd., John:
New sheet galvanizing technique, 12/9, p.129

Mc

MacDermid Inc.:
Solder stripper for printed circuit boards, IE, 8/19, p.112

McCreary Steel Co.:
Shear feeding system at warehouse, 9/30, p.45

McKay Machine Co.:
Joint operations with Mannesmann-Meer, B, 9/2, p.35
Ring projection welder, IE, 7/22, p.119

McKinsey & Co. Inc.:
Overseas investment outpaces domestic, 11/25, p.45
Surveys executive pay abroad, 11/4, p.43

Walton predicts world trade expansion, 7/8, p.101

McLouth Steel Corp.:
L-D oxygen patent case starts, 10/21, p.34

M

3M Co.: See Minnesota Mining

M-H Standard Corp.:
Furnace preheats, stress relieves parts, IE, 10/28, p.100

MSL Industries Inc.:
Buys Epps Industries, B, 10/28, p.31

Macrosonics Corp.:
Ultrasonic equipment for continuous processing, IE, 12/16, p.132

Magnaflux Corp.:
Combined ultrasonic and magnetic particle billet test system built for Youngstown Sheet, 10/28, p.31
Crack detector handles low, medium volume (ferrous materials-parts), 9/23, p.101
Magnetic particle tester for Sweden, IE, 7/8, p.116

Magnethermic Corp.:
Forms Special Products Div. (continuous casting units), 7/1, p.26

Magnetics Inc.:
Buys Atlantic Transformer, B, 8/5, p.32

Magnolia Steel Corp.:
To operate steel mill in Arkansas (reinforcing bars), 8/19, p.27

Magnus Chemical Co. Inc.:
Stamping, forming oil evaporates after use, IE, 8/26, p.121

Mannesmann A. G.:
Plastic skin protects steel pipes, 7/1, p.74

Mannesmann-Meer Inc.:
15 ton compacting press, IE, 7/29, p.151

Manning, Maxwell & Moore Inc.:
Hand geared trolley, IE, 9/2, p.126
Jib cranes for open areas, IE, 7/8, p.119

Marion Power Shovel Co.:
Tandem submerged arcwelder on large manipulator, cost saver, 8/5, p.40

Marley Co.:
Buys American Scale & Vise, B, 9/23, p.35

Marquette Mfg. Co.:
Aluminum gas welding rod, IE, 7/15, p.108

Marsh Steel & Aluminum Co.:
"Metalrama" shows revitalized and modernized warehouse, 11/18, p.33

Martin Co.:
Research unit for testing nonmetallic materials at surface temperature at 5000° F, 7/29, p.33
What Martin thinks of weld porosity (missile field), 9/2, p.68

Master Alloys Inc.:
Formed by (firms), 10/21, p.51

Master Chemical Corp.:
Chemical coolant, IE, 12/2, p.137

Master Manifolds Inc.:
Formed, B, 9/23, p.35

Mattison Machine Works:
Builds giant rotary grinder for aerospace, 7/8, p.72

May-Fran Mfg. Co.:
Equipment reclaims oil from chips, 11/18, p.133
Metal chip conveyor, IE, 9/16, p.231

Mehl Mfg. Co.:
Packaging unit wraps with polyethylene, IE, 7/22, p.115

Melpar Inc.:
Airbrasive tool for fine cutting, 7/29, p.87
Speech synthesis instrument, EVA, 9/2, p.18

Mesta Machine Co.:
Contract from Youngstown Sheet for rolling mills, 8/19, p.28

Metallurgical International Inc.:
New equipment blasts carbides into powder for re-use, 9/2, p.70

Metal Decorating Ltd.:
Formed, B, 12/16, p.35

Metals & Controls Inc.:
AF contract for processing refractory metal alloy foils, B, 8/19, p.35
New clad copper used in semiconductor parts, 9/2, p.29

Metco Inc.:
Cermet coatings for high temps., IE, 8/12, p.170
Hardfacing alloy coating, IE, 11/18, p.132

Metrol Public Service Co.:
Fuel oil tubing welded, plastic coated, 12/2, p.85

Michigan-Dynamics Inc.:
Adhesive assembly-filters, 12/16, p.76

Michigan Tool Co.:
Automatic grinder forms slots in ball cages, IE, 9/30, p.104
Form grinder, IE, 7/15, p.107

Micromatic Hone Corp.:
Honer processes tubes, IE, 7/15, p.107
May sell, B, 9/9, p.35
Two spindle unit hones spherically, IE, 12/30, p.75

Micrometrical Mfg. Co.:
Proficorder measures finishes, 7/8, p.58

Micro-Tool Engineering Co.:
N/C on Burgmaster turret drill for aircraft manifold, 7/22, p.52

Micro-Vu Corp.:
Optical comparators, IE, 10/28, p.100

Middle West Service Co.:
Indirect worker productivity, survey, 7/15, p.28

Midland-Ross Corp.:
Electric heating element (Lectro-Tube), 11/18, p.138
Four heat treating developments, IE, 10/14, p.234
High vacuum furnace (batch type), IE, 11/25, p.174

Midvale-Heppenstall Co.:
Bucket wheel for jet turbine sonically tested, 7/29, p.35
Licensed for (Anocut) electrolytic machining, 9/30, p.32

Milford Rivet & Machine Co.:
Semitubular riveters, IE, 9/16, p.232

Miller Mfg. Co.:
Merges with Hydrometals, B, 8/12, p.35

Minik Tracers Inc.:
Features of dual motor tracing system, IE, 9/23, p.107

Mine Safety Appliances Co.:
Fabric laminations, helmets single plastic resin system, 9/16, p.132
Protective hearing device, IE, 8/12, p.172

Minneapolis - Honeywell Regulator Co.:
Honeywell computer contends for 'small market,' 12/16, p.129

Minneapolis-Moline Inc.:
Ford truck, standup, IE, 11/18, p.131

Minnesota Mining & Mfg. Co.:
Adhesives, new techniques (cover), 8/5, p.37
Texture-Key system, finishes, IE, 11/25, p.180

Minster Machine Co.:
Press forms, draws, blanks, notches, IE, 8/5, p.99

Mirro Aluminum Co.:
Buys National Metal Coating, B, 12/23, p.25

Mobil Oil Co.:
MI/DAC management data processing system cuts cost leaks in maintenance, 11/4, p.98

Modern Plastic Machinery Corp.:
Four extruders, advantages cited, 9/9, p.138

Modine Mfg. Co.:
Aluminum heat exchangers for auto air conditioning units contoured to fit irregular space, 12/30, p.29
Self-cleaning radiator (rows of tubes), 11/4, p.120

Moline Inc.:
Compact Mobilift series, IE, 7/8, p.116

Monarch Machine Tool Co.:
Buys Edlund Machinery, 9/9, p.35
Contour turning of both ends (railroad axles), 9/23, p.101

Monroe Chemical Co.:
Plastal Col-Tol coolant and lube for tough alloys, IE, 7/22, p.110

Moore Special Tool Co.:
Measuring machines added, IE, 8/26, p.113

Morrison Co.:
Billet grab holds 25,000 lb loads, IE, 12/30, p.73

Motorola Inc.:
Portable two way radio, Handie-Talkie, IE, 10/21, p.198

Moto-Truc Co.:
Solid state control—lift truck option, IE, 7/29, p.156

Motor Appliance Corp.:
Automatic cycle chucking machine, 8/19, p.54

Motor Wheel Corp.:
Wheel dev. for Buick, 9/23, p.82

Mueller Co., Paul:
Nylon type abrasive finishing wheel, 7/22, p.53

Multisonic Corp.:
Formed, B, 11/25, p.51

Murray-Way Corp.:
Grinder dresses rolls while on mill, IE, 11/4, p.167

N

Nth Products Inc.:
Tubemaker thrives on tough, unusual jobs, 11/11, p.60

Nagel-Chase Mfg. Co.:
Belt grinder finisher of small plastic parts, 12/30, p.32

National Acme Co.:
Thread roller on bar machine, 9/16, p.161

National Air Vibrator Co.:
Pneumatic table, table packs, IE, 9/2, p.137

National Beryllia Corp.:
Self-bonded carbide shapes, 11/4, p.169

National Broach & Machine Co.:
GRL automatic electronic gear inspection machine in Red Ring line, 12/16, p.130
Tooth honing machine, IE, 8/5, p.107

National Carbon Co.:
Graphite cloth for electric furnace elements, IE, 7/1, p.84

National Cash Register Co.:
Induction furnaces installed to melt gray iron and ductile iron, 10/28, p.54

National Distillers & Chemical Corp.:
Buys Loud Machine Wks., 9/9, p.35

National Electric Welding Machines Co.:
Innershield arcwelder, versatile, IE, 12/23, p.78
Mash seamwelder, IE, 9/23, p.97 and 10/7, p.136

National Homes Corp.:
Aluminum homes unveiled at Lafayette, Ind., 8/26, p.29

National Lead Co.:
Doehler-Jarvis: Diecast machine makes aluminum mats for aircraft field, 12/16, p.78

National Machinery Co.:
Cold forming machines, IE, 11/11, p.121

National Research Corp.:
10 in. valve designed for low pressure jobs, IE, 8/12, p.172
Lab model vacuum resistance furnace, IE, 9/9, p.138
Mylar, aluminized film for cryogenic fuels, 12/16, p.19
New superconductor material (Niostan), cuts magnetic field costs, 8/12, p.33

National Standard Co.:
Perforated stainless for filters cuts clogging, 8/26, p.59
Teflon coated wire cloth, IE, 10/7, p.139

National Steel Corp.:
Continuous casting progress, 11/18, p.18

National Ultrasonic Corp.:
Agitating washer - pneumatically operated, IE, 7/29, p.150
Ultrasonic washer for hard to clean parts, IE, 10/21, p.191

National Welding Machines Co.:
Spikewelding applications, 7/22, p.50

Navan Products Inc.:
Air actuated device for lathes and grinders opens and closes, IE, 8/19, p.114
Thin slitting blades of solid carbide, IE, 11/11, p.124

Nelsen Steel & Wire Co.:
Developmental marketing pays off, mill scale turned into "Green Garde" for gardens, 9/9, p.64

New Britain Machine Co.:
Chucking machine, setup time cut, 8/5, p.56
Injection molder, IE, 12/16, p.132

New England Gear Works Inc.:
Gearmotors, high starting torque, IE, 8/5, p.110

New Jersey Zinc Co.:
Awards to diecasters, 9/2, p.31

Newport News Shipbuilding & Dry Dock Co.:
Buy America decision means turbine contract, 8/12, p.18

Niagara Machine & Tool Works:
Press brakes, multiple operations, IE, 9/23, p.104

Nichols Wire & Aluminum Co.:
Eddy currents test aluminum rod quality, 7/29, p.85

Nilfisk of America Inc.:
Vacuum cleaner has dirt interceptor, IE, 12/9, p.179

Noll Engineering Co.:
Testing unit, IE, 8/5, p.110
Unit pulverizes many materials, IE, 8/19, p.116

North American Aviation Inc.:
Concept of the 350 ft Saturn V, 7/15, (cover)
Rocket engines for Gemini, vacuum tests, 11/11, p.75

North American Mfg. Co.:
Strip width recorder, IE, 11/11, p.120

North American Mogul Products Co.:
Buys Fulbright Labs, 12/2, p.36

Northrop Corp.:
Recovers from cancellation of Skybolt contract, 8/5, p.43

Northwest Industries Inc.:
Buys Product Eng., B, 7/29, p.35

Northwestern Steel & Wire Co.:
3 head strapper doubles output with same crew (heavy gage wire coils, one man operated from a console), 12/16, p.86

Norton Co.:
Attachment improves wheel dressing, IE, 10/7, p.135
How to find profit in abrasive machining: J. E. Haggett and R. L. Smith, 9/16, p.126
Price increases, machine tools, 9/2, p.33
Tumbling abrasive-high luster, IE, 7/22, p.114
Wafer dicing technique, multiblade, 10/14, p.49

Novo Industrial Corp.:
Stock components form custom cranes, 11/11, p.120

O

Oak Mfg. Co.:
Partnership with Japanese firm, 12/2, p.117

Oakite Products Inc.:
Stripper of paints from metals, IE, 7/22, p.114

O'Bannon Co., Walter:
Hand lathe, bar automatic teamed, 10/7, p.78

Oglebay Norton Co.:
Taconite plant plans (with Ford), Minn., 8/5, p.30

Ohio Crankshaft Co.:
Tocco low cost induction heating unit, IE, 12/9, p.178

Ohio Steel Foundry Co.:
Opens hearths boost capacity, 3rd under construction, 12/9, p.51

Ohlinger Industries Inc.:
Formed, B, 8/26, p.35

Ohmart Corp.:
Automatic coating controller, IE, 7/29, p.158
Beta gage system checks sheets, IE, 11/4, p.159
Portable beta gage checks production lines, IE, 7/1, p.92

Oilfield Truck Equipment Co.:
Empty weight pared from tandem trailer rig, 8/12, p.93

Oilgear Co.:
Hp constant on variable speed drive, IE, 8/5, p.110
MFS motors, IE, 7/1, p.90

Olin Mathieson Chemical Corp.:
Aluminum sheet-plate facilities added to Hannibal, Ohio, rolling mill, 7/15, p.33
Contracts for cryogenic separation unit (hydrogen recovery), 9/9, p.35
Copper alloys in higher tempers, 8/5, p.56

Onsrud Machine Works:
Orders 150 ton milling machine from France, 11/18, p.122

Osborn Mfg. Co.:
Brushes can be ganged, or used singly, IE, 11/18, p.131

Otis Elevator Co.:
Gas powered truck, 10 mph, IE, 7/8, p.118
Lindaman: Communicating with workers in future leisures, 8/5, p.43
Testing machine operated by students, trainer simulator for future vehicles, 10/28, p.31

Oxford Precision Inc.:
Rotangle grinds cylinders, etc., 9/23, p.98

P

Pacific Metals Co.:
Buys Hawaiian firms, B, 7/8, p.33

Pall Corp.:
Acquires Amflex of AMF, 11/4, p.51
Buys Integral Motor Pump, 10/21, p.51

Panelyte Industrial Div.:
See Thiokol Chemical

Pangborn Corp.:
Finishing equipment, supply lines merged with Carborundum, 10/14, p.51

Parker-Hannifin Corp.:
Buys Kenmore Machine Products, B, 12/16, p.35

Parker-Hartford Corp.:
Precision tool setter, IE, 8/26, p.123
Visual control on surface grinder, IE, 8/5, p.106

Parker-Kalon: See Gen. American Transportation

Parsons Corp.:
Autoclave cleaning system replaces open tanks (dev. for treating aluminum steel fuel tube sections on Apollo), 12/16, p.31
Missile fuel tubes of sealess stainless are shear spun, 12/9, p.47

Patterson Industries Inc.:
Absorbs personnel of Colonial Iron Wks. subsidiary, 12/9, p.53

Peer Inc.:
Spotwelders foot or air operated, IE, 7/8, p.118

Penetone Co.:
Biodegradable degreasers and cleaners, IE, 12/23, p.76

Pennsalt Chemicals Corp.:
Industrial washers force cleans parts, IE, 11/4, p.168

Perény Equipment Co. Inc.:
Heat treating furnace, general purpose type, IE, 12/2, p.128

Perkin-Elmer Corp.:
Gas laser develops 1.5 milliwatts power, IE, 9/30, p.104

Pettibone Mulliken Corp.:
Mold-blow-squeeze units (Moldblomatic) new at Beardsley Div., 9/16, p.168

Pfaff & Kendall:
"Configured" tubing, forms complex shapes, 11/4, p.105

Pfaudler Co.:
Nucerite (ceramic-metal material) extends thermocouple life, 12/9, p.124
Tester inspects dielectric coatings, IE, 9/30, p.102

Phelps Dodge Copper Products Corp.:
Buys Lee Bros. Foundry, 12/9, p.53

Phelps Dodge Corp.:
Enters aluminum fabricating field, 12/2, p.33

Philco Corp.:
Reader computers, three contracts, IE, 12/23, p.75

Phoenix Steel Corp.:
Continuous casting equipment, Claymont, 8/12, p.18

Picker X-Ray Corp.:
X-ray sensitive TV system, IE, 7/29, p.160

Pines Engineering Co.:
Tape controlled tube bender, 11/18, p.31

Pittsburgh Steel Co.:
Basic oxygen furnace (Moneseen) nears completion, 9/23, p.33

Pittsburgh Steel Foundry & Machine Co.:
Builds aluminum foil mill in Chile, B, 9/23, p.35

Plasmadyne Corp.:
Gas mixing assembly and powders for plasma spraying, 9/16, p.229
Speed stressed in plasma surfacing, IE, 12/9, p.184

PneumoDynamics Corp.:
Acquiring Blanchard Machine, B, 10/7, p.36
Buys Cone Automatic (new officials), 7/29, p.31

Pollak & Skan Inc.:
People renting (engineerings), 11/11, p.27

Pope Machinery:
Center regrinder, IE, 7/29, p.152

Porter Inc., H. K.:
Hydraulic power cutters cut metal, IE, 7/15, p.113

Porter Company Inc., H. K.:
Peerless Electric: Motor designed for corrosive environment, IE, 8/19, p.115
Riverside-Alloy enlarges continuous cast wire facilities, 8/5, p.31

Power Control Products Inc.:
Air operated coil and strip feeder, IE, 7/22, p.120
Automatic cutoff, 14 in. blade, IE, 12/2, p.128
Coil, strip feeder automates hand presses, IE, 10/14, p.237
Saw for high speed cutting, IE, 10/7, p.132

PowerHold Inc.:
New name for PowerGrip Inc., 9/9, p.35

Pratt & Whitney Co. Inc.:
Dimensional accuracy checked, IE, 11/18, p.132

Precision Scientific Co.:
Polisher, wet grinder prepares metal samples, IE, 8/5, p.109

Precision Welder & Flexopress Corp.:
Automatic welder turns blanks into welded tanks, 7/29, p.92
Transistor welder, IE, 10/21, p.196

Prentice-Hall Inc.:
Business growth in coming year forecast, 7/15, p.19

Pressed Steel Co. Ltd.:
Auto body shells fabricated for Rover's assembly plant, 12/9, p.157

Production Machine Div.:
See Gardner-Denver

Prosser & Son, Thomas:
Template guides point-radius grinder, IE, 10/7, p.142

Pullmax A. B.:
Flanging machine, 12/16, p.80

Punch Products Corp.:
Unipress duplicator, IE, 7/15, p.108

R

REM Sales Inc.:
Chucking lathe, dual purpose, IE, 8/19, p.112

RHJ Corp.:
Instrument monitors soldering, IE, 10/7, p.138

R-O Mfg. Co.:
Attachment for grinders cuts tools without dressing wheel form, IE, 9/9, p.141

Racine Hydraulics & Machinery Inc.:
Buys pump line, Galena, Ohio, 12/2, p.36

Radiation Inc.:
Telemetry system monitors strip rolling mill, 8/12, p.110

Radio Corp. of America:
"All purpose" modular designed computer (four basic functions) introduced, 8/26, p.28
Expands Lancaster tube plant, B, 7/22, p.32
Forms Aerospace Systems Div., B, 9/16 p.57
Memory array, size - cost reductions, IE, 12/9, p.187
Sarnoff: Modern man must combine sciences with humanities, 12/16, p.29
Studies to design an Army communications control center for satellite program, 8/12, p.109

Raimke Tool Corp.:
Drill head, small hole production, IE, 10/7, p.138

Ramite Co.:
Furnace refractory reduces maintenance, IE, 8/12, p.175

Rampe Mfg. Co.:
Orbital finisher, IE, 8/5, p.106
Orbital finisher, high speed, IE, 11/11, p.118

Ransburg Electro-Coating Corp.:
Electrohydraulic hand gun conserves paint, IE, 9/9, p.140

Rapid Electric Co. Inc.:
Silicon rectifier equipment interchangeable with tube type, 10/28, p.47

Raybestos-Manhattan Inc.:
Packing rings of fabric (duck) and molded neoprene, 12/9, p.130

RayData Corp.:
Detection of vibration and mechanical motion, instrument, IE, 9/9, p.148

Raymond Corp.:
Truck totes pallets in tight aisles, IE, 7/8, p.121

Ray-Tek Inc.:
Infrared thermometer no contact necessary, IE, 9/30, p.94

Raytheon Co.:
Announces moves to improve profits, 12/16, p.29
Average executive, more time receiving info than dispensing it, 8/19, p.18
Control speeds weld production, IE, 11/25, p.179

Rea Magnet Wire Co. Inc.:
Boosts conductivity of magnet strip, sheets, 9/9, p.96

Recordak:
Microfilm reader motorized, IE, 12/9, p.178

Reed Rolled Thread Die Co.:
Feature of two die thread roller, IE, 9/9, p.149

Refractory Specialties Co.:
Botfield Refractories a subsidiary, 9/9, p.35

Reliance Electric & Engineering Co.:
Forms Japanese company, B, 12/30, p.25

Renault:
Balancing machine-computer control (engine crankshafts), Cleon Works, 9/9, p.87

Republic Steel Corp.:
AF contract (R&D), 7/29, p.33
Antenna towers to transmit Voice of America, 9/2, p.80
Automatic billet inspector, S. Chicago Wks., 11/18, p.35
Boiler reclaims heat from waste gases at oxygen lanced open hearth (air pollution control), 9/2, p.35
Boyer, Patton elections, 12/2, p.33
Controlled atmosphere annealing furnace, alloy steel bars, Canton plant, 11/25, p.100
Cooled roofs on 80 ton electric furnace, Canton O., may save buck a ton, 12/9, p.96
Equipment ($3 million) for plants at Youngstown and Niles, 11/25, p.42
Enlarges bar making facilities, S. Chicago, 9/16, p.55
Oxygen furnaces (contracts awarded Kopper) for Gadsden and Warren, 8/19, p.28
Patton: No more industrywide steel strikes with Human Relations Committee, 12/30, p.13
Plastic Products Div. formed, 10/28, p.32
Plastic (X-Trube) fuel oil tubing-pipe, 12/2, p.85
Reorganizes alloy sales div., B, 7/22, p.32
Structural steel tubing applications, 8/12, p.94
Vacuum degassing unit, Canton, boosts sales, 7/1, p.25
Vacuum degassing, ladle, induction stirring, Canton, 7/8, p.66
Vacuum melt facilities get electrical control system called Consarmatic, Canton plant, 9/2, p.29

Resources for the Future Inc.:
Aluminum predictions, developmental marketing, 9/16, p.133

Revere Copper & Brass Inc.:
Restrictor tube controls flow, pressure, IE, 11/11, p.125

Revolvator Co.:
Narrow aisle walk-along lift truck, IE, 7/22, p.118

Reynolds International Inc.:
Aluminum rod mill to be built in Quebec, 11/18, p.33

Reynolds Metals Co.:
Aluminum-Magnesium alloy (Almag) new, 8/5 p.56
Expands canmaking facilities, Calif. plant and Sheffield, 7/8, p.31
Price raise to bolster profit margins, 9/30, p.26

Rheem Electronics Corp.:
Solid state numerical positioning control, building block principle, IE 8/12, p.176

Richards-Wilcox Mfg. Co.:
Sold, B 10/7, p.36
Tray conveyor aids assembly, IE, 7/1, p.90

Ridge Tool Co.:
Acquiring Supreme Products, B, 9/9, p.35

Riehle Testing Machines Div. See Ametek Inc.

Rivett Lathe & Grinder Inc.:
Lathe features—precision, productivity, IE, 9/16, p.231

Roanoke Electric Steel Corp.:
Continuous casting plant, operation report, 10/14, p.148

Robbins & Myers Inc.:
Trolley hoists, IE, 7/8, p.118

Robertshaw Controls Co.:
Thermal setup guides building environment, IE, 8/5, p.100

Robinson Technical Products Inc.:
Vibrashock Div. markets Let-L-Flex mountings of stainless steel, 7/29, p.28

Rockford Machine Tool Co.:
Greenlee Bros. buys for subsidiary, 9/30, p.31
LA engine lathe design, IE, 12/30, p.73
RMT open side milling machine, features, IE, 9/23, p.97

Rock-Mill Inc.:
Contour mill tape controlled, IE, 7/1, p.84

Rockwell Mfg. Co.:
15 in. drill press, 6 in. stroke, 11/11, p.116
17 in. drill press variable speed type, IE, 8/5 p.102
Adds gas products research lab at DuBois, Pa., 12/23, p.24
Forms Valve Div., appointments, 9/2, p.35
R&D program aimed at portable power tools, 9/9, p.33

Rockwell-Standard Corp.:
Buys stock of Ontario Steel Products, 11/11, p.35

Rollway Bearing Corp.:
Expansion means doubling market share, 8/26, p.31

Rolock Inc.:
Endothermic gas generator, ammonia dissociator displayed, 10/14, p.236

Rosan Inc.:
President wants better protection for inventions, 11/11, p.29

Roto-Cast Inc.:
Formed, B, 9/23, p.35

Roto-Finish/Ransohoff Co.:
Vibratory deburring-finishing machine has tilt unload feature, 12/16, p.137

Rotor Tool Co.:
High cycle electric tools speed grinding finish of cast iron for machine tools, 9/16, p.165

Rover Co. Ltd.:
Bolts auto body assemblies with unusual method, 12/9, p.157

Royco Instruments Inc.:
Instruments make quick temp. checks, IE, 11/25, p.176

Rundt & Associates, S. J.:
New York World Fair, trouble getting foreign exhibitors, 8/19, p.97
Soviet gold sales to West this year, 11/18, p.121
Trade trends, Reds and West, 12/2, p.117

Russell, Burdsall & Ward Bolt & Nut Co.:
Graves advises Ingersoll-Rand on cutting fastener costs, 10/28, p.49

Ryan Aeronautical Co.:
Fabrication of solar panel structures for Mariner Mars fly-by vehicle, 8/12, p.33

S

SKF Industries Inc.:
Magnetic particle tester for Swedish plant, IE, 7/8, p.116
Trend to tailored roller bearings, 8/5, p.29
World's Fair exhibit, motion keynoted, 12/9, p.116

Sabema Corp.:
Zip strip fastener, 9/2, p.19

Salem-Brosius Inc.:
Continuous heat treat line, Duquesne Wks., B, 8/19, p.35

SAMES U. S. A. Inc.:
Electrostatic fluid bed system speed coating, 8/12, p.105

Sciaky Bros. Inc.:
Single phase control for welders, IE, 9/16, p.230
Spotwelder (TIG) shown, 10/21, p.123

Scientific Advances Inc.:
Hydraulic press for high pressure work, IE, 8/19, p.116

Scovill Mfg. Co.:
Aluminum coil annealing better 3 ways, 11/4, p.97

Seco Electronics Inc.:
Motor speed controls, IE, 8/5, p.104

Seedorff & Co. Inc.:
Refrigeration unit cools cutting fluids, IE, 9/9, p.139

Selas Corp. of America:
Unit detects, corrects flame characteristics, IE, 10/14, p.235

Selectrons Ltd.:
Flow plating mismachined parts, 12/9, p.107

Sentry Co.:
Electric furnace, features, IE, 10/14, p.234

Service Machine Co. Inc.:
Press line expanded, IE, 10/7, p.141

Setco Industries Inc.:
Safety on snagging grinders, features, IE, 12/2, p.127
Vertical boring mill grinding attach., IE, 8/5, p.102

Shaffer Tool Works:
Buys American Brake Shoe plant, B, 9/30, p.32

Shakeproof Div.: See Illinois Tool Works

Sharon Steel Corp.:
Amsted license to test pressure pouring process, 7/29, p.25
Coal mine shutdown dilemma solved by Eastern Coal Lab, 10/21, p.121
Constructs Sendzimir cold rolling mill, Roemer Wks., 8/19, p.35

Sheehan Co., R. T.:
Parts bank serves as live storage, IE, 10/7, p.132

Sheffield Corp.:
Automatic rotary centering table, IE, 11/4, p.163
Gage classifies coating thickness without contact, 11/11, p.115
Pneumatic gaging circuit checks hypodermic needle bores, IE, 12/16, p.135

Sheffield Div.: See Bendix

Sheldon Machine Co.:
Chuckers redesign, IE, 7/15, p.110

Shell Chemical Co.:
Epoxy 942 pastes bond metals, IE, 11/11, p.122

Shell International Petroleum Co. Ltd.:
New burner "toroid" used in steelmaking, 8/12, p.108

Shelton Iron & Steel Co.:
Computer plans cuts at beam, section mill, 8/12, p.31

Sheridan-Gray Inc.:
Material handling-storage setup, IE, 8/19, p.110

Shipley Co. Inc.:
Photo resist process for printed circuits, transistors, etc., IE, 8/12, p.177

Sierracin Corp.:
Heated cradle cover-plastic for newborn babies, X-15 aircraft windshield, 12/23, p.26

Signode Steel Strapping Co.:
Power strapping tool, IE, 12/16, p.136

Silent Hoist & Crane Co.:
Ingot mold handler for Inland, 9/23, p.98

Singer Co.:
Acquiring Empire Devices, B, 7/1, p.26
Empire Devices transferred to Metrics Div., 9/16, p.57

Small Motors Inc.:
Motor lines, IE, 7/22, p.119

Smith Corp., A. O.:
Auto frame fatigue testing 'vibration', 9/16, p.149
Buttonwelding equipment, IE, 11/18, p.136
Compact wire driver, IE, 7/1, p.86
Expands product service units, 11/4, p.49
How computer charts corporation's future (D. H. Bein), 8/5, p.44
Welding units for solid wire use, IE, 8/26, p.121

Smooth-On Mfg. Co.:
Sealing compound flexibility, IE, 9/23, p.101

Snap Tite Inc.:
Quick-disconnect couplings pare maintenance, 11/18, p.77

Snow Mfg. Co.:
Two spindle unit, IE, 9/2, p.128
Unit drills, taps, deburrs round parts, IE, 7/8, p.120

Snyder Corp.:
Assembly machine (cylinder heads for auto engines), 8/12, p.112
Lathe automatically loads, unloads work, 11/4, p.112
Line for transmission cases sold to English automaker, IE, 9/30, p.94
Transfer machine-two segments (processes auto engine manifolds), IE, 11/4, p.160

Solar Aircraft Co.:
Acquired by IHC, 9/16, p.57

Sonobond Corp.:
Fine wires, thin foils welded ultrasonically, IE, 9/23, p.104

Soundcoat Co.:
Foam damping sheets quiet noise, vibration, IE, 12/2, p.131

Southern Research Institute:
Lab furnace holds temps at 6500° F, 12/23, p.23

Spang & Co.:
Buys interest in Ft. Pitt Works, 8/12, p.35

Special Engineering Service Inc.:
Coil-Matic line shears, IE, 7/22, p.115

Special Metals Inc.:
Buys rolling mill and wire mill, B, 9/2, p.35

Speedlap Corp.:
Optical device (Chek-Flat) checks finished metal flatness, IE, 7/15, p.114

Sperry Gyroscope Co. of Canada:
Debuts new solid state N/C unit (Umac 5), 7/29, p.102

Sperry Products: See Automation Industries

Sperry Rand Corp.:
Consolidation B, 7/1, p.26
Univac device, phone computer, Data Line Terminal, 11/11, p.74

Spurgeon Co.:
Feeder handles bars, tubes, IE, 7/1, p.83

Stamets Co., Wm. K.:
Design flexible on roller leveler, IE, 11/4, p.168

Standard Screw Co.:
Western Cold Drawn Steel Div. adds continuous annealing furnace for bar stock, 9/23, p.33

Standard Steel: See Baldwin-Lima-Hamilton

Stanley Works:
Nylon strapping shrinks with package, IE, 11/18, p.137
Plastisol protects glass and metals, IE, 9/23, p.98

Star Cutter Co.:
Starbore gun drills holes to 1¼ in., IE, 11/25, p.174

Stearns Electric Corp.:
Clutch-brake coupler, IE, 8/26, p.123
Disc brake weight reduction, IE, 7/1, p.87

Steel Co. of Canada Ltd.:
Capital outlays up by $118 million, 7/8, p.30

Stewart-Warner Corp.:
Self-powered furnace reduces heat loss, 9/16, p.55

Stocker & Yale Inc.:
Optical comparator on profile grinder, IE, 10/7, p.141

Stokes Corp., F. J.:
Fast cycles on molder cited, IE, 9/9, p.138

Stokvis Multiton Corp.:
Wire rope hoists, up to 20 tons lift, IE, 12/9, p.183

Stora Kopparbergs:
Rotary furnace for pig iron, 11/11, p.59

Stratton Equipment Co.:
Portable floor cranes, hydraulic, IE, 10/21, p.190

Studebaker Corp.:
Clarke Floor Machine packaging design, 11/11, p.64
Egbert leads revival fight, 9/23, p.81
Layoffs: Warnings didn't come (Labor Dept. take action), 12/23, p.23
Why Studebaker called it quits, 12/16, p.111

Sunbeam Corp.:
Rotisserie turned by powerful magnet clock motor, 9/16, p.154

Sunbeam Equipment Corp.:
Cold wall, vacuum furnace (Kold-Retort), IE 8/12, p.169
Radiant tube furnace heats, quenches small parts, IE, 12/9, p.178

Sun Oil Co.:
Grinding oil for hard steels, IE, 10/28 p.102
Sungrind oil, IE, 8/5, p.104

Sunrod Mfg. Co.:
Steam cooled furnace roofs made for Republic, 12/9, p.96

Superior Tube Co.:
Stainless flex tubing for meters, 7/22, p.54

Sutton Engineering Co.:
Acquires Maust Machinery, B, 10/7, p.36
Bar straightener, IE, 10/28, p.105
Bar straightener, IE, 11/4, p.170
Straightener, flats and shapes, IE, 9/30, p.93
Tube straightener, IE, 11/11, p.118

Sutton Tool Co.:
Media static in abrasive finisher, 11/25, p.178

Swanson-Erie Corp.:
Dual turret indexing unit speeds assembly of transistor components for telephone handset circuits, 9/23, p.54

Sylvania Electric Products Inc.:
Magnetic light switch, 12/23, p.25

Symington Wayne Corp.:
Symington Div.: Computer plots foundry profit moves, 11/4, p.94

T

Thomson Industries Inc.:
Linear roller bearing, IE, 11/18, p.140

Thriftmaster Products Inc.:
Fixed multiple spindle drill heads operate at accelerated feed rates, IE, 11/25, p.180

Timesavers Sanders Inc.:
Combination speed sander-speed burrer (extrusions and stampings), 11/4, p.166

Thompson Ramo Wooldridge Inc.:
Agreement with Concast for casting machine computers, 12/9, p.46, and 11/18, p.17
Adopts new divisional names (with TRW), 11/18, p.33
Develops 300 in. rocket nozzle, 7/15, p.17
Inventor Landers and a dybloc: Can a machine have a soul? 11/25, p.95
Numerical control price up (machine tools), 8/12, p.111
Solar powered generator, TO, 7/29, p.20
Tapco coats fasteners for space, 9/23, p.17

TAC Technical Instrument Corp.:
Ultrasonic tester for tubes, bars, IE, 10/28, p.105

TRG Inc.:
Microwelder uses laser, TO, 12/30, p.16

Taper Micrometer Corp.:
Electro-Cal comparator measures to 2¼ millionths, IE, 12/23, p.79

Taylor Devices Inc.:
Machining to 0.0000005 in. (surface finish for inside diameters, liquid spring parts in space program), 7/8, p.58

Taylor-Winfield Corp.:
Absorbs Induction Heating Corp., 12/9, p.53

Techalloy Co. Inc.:
Acquiring M & A Steel Sales, 12/2, p.36

Teleflex Inc.:
Ceramic metal coating goes on like paint, 11/18, p.31

Temescal Metallurgical Corp.:
Building electron beam steel pilot plant, 8/26, p.33

Tempil Corp.:
Tempilstiks, heat sensing crayons, improvements, IE, 10/14, p.234

Texaco Inc.:
Forging compound does not drip, IE, 11/4, p.166

Texas Eastern Transmission Corp.:
Expands natural gas system, 7/15, p.28

Thermal Dynamics Corp.:
Automatic equipment feeds fine powders, IE, 7/15, p.109

Thermal Syndicate Ltd.:
Method aids strength to ceramic cores, 12/9, p.126

Thiokol Chemical Corp.:
Panelyte div.'s two new elastomeric insulation materials, 12/16, p.33

Thomas & Baldwins Ltd., Richard:
Clay gun permits high extrusion pressure, 8/19, p.58

Thompson Designs Inc.:
Turret adapts to many machines, IE, 7/29, p.154

Timken Roller Bearing Co.:
Adds electric arcmelting furnace, '64, 7/29, p.115
USW cool to GAW proposal, 8/26, p.28
Vacation plan, USW contract, 9/16, p.34

Tinnerman Products Inc.:
Foot presses, low cost fastener development, 8/19, p.18
High torque fastener resists loosening, IE, 11/25, p.181
Pinch-Grip fastener holds panels, serves as anchor, IE, 12/30, p.75
Plastic capped fastener, IE, 11/4, p.163

Tishman Research Corp.:
'Snap-on' metal walls (plastic-lath wall market), 9/2, p.69

Tokai Iron & Steel Co.:
Turntables speed hot strip mill roll changes, 9/23, p.56

Torrington Co.:
Establishes European Specialties Div., B, 7/29, p.35
Swaging, cost saving process, 10/28, p.47
Ultraprecision rollers for space age produced, 7/22, p.31

Trailex Inc.:
Organized, B, 10/14, p.53

Transamerica Corp.:
Acquires De Laval and Great Lakes Mfg., 10/28, p.31

Tri-Point Industries Inc.:
Extruded Teflon tubing, IE, 12/23, p.79
Teflon-aluminum laminated sheets dev. by heat pressure bonding, 9/2, p.31

Tuboscope Co.:
Aluminum pipe, radiation flaw test, 9/9, p.87

Turco Products Inc.:
Alkaline cleaning agents, IE, 12/23, p.80

Tyco Laboratories Inc.:
Lasers made from abrasive crystal, 9/16, p.166

Tysaman Machine Co.:
Rotating abrasive cutoff unit, IE, 10/28, p.106

U

Udylite Corp.:
Acquires Metal Finishing Div. of Butcher, 11/4, p.51
Customatic machine, easy cycle changeover, IE, 10/28, p.97

Union Carbide Corp.:
Adds vacuum melting systems in Kokomo plant, 11/18, p.35
Expands at Stellite Div., 9/30, p.31
Metallic diffusion coatings, IE, 11/4, p.165
Name changes for divisions, 9/9, p.35
See also Linde Co.

Union Carbide Stellite Co.:
Space alloy, air melted furnaces, 9/2, p.33

Union Twist Drill Co.:
Buying Merriman Bros., B, 7/8, p.33

United Air Lines:
Caravelle jet engine blades get ultrasonic test, 7/22, p.51

United Aircraft Corp.:
Electron beam welder, Hamilton Standard, IE, 7/1, p.84; 8/19, p.109
Hamilton Standard gets electron beam rights, B, 11/11, p.33

United-Carr Fastener Corp.:
Chrome plated plastic letters on Ford Galaxies, 11/18, p.114

United Insulator Co, Ltd.:
Composite coating for metal foundry molds, flame sprayed, 10/28, p.29

United Shoe Machinery Corp.:
Pull type rivets ease, speed light assembly: Jack Schofield, 8/19, p.63
Safe-Pack: Composites catch on in booming can market, 11/18, p.78

U. S. Baird Corp.:
Grip-type feed to stamping unit, IE, 10/28, p.102

U. S. Electrical Motors:
Automatic electric drive control, IE, 7/29, p.155
Portable power unit converts frequency, IE, 7/15, p.115

U. S. Industrial Chemicals Co.:
Zirconium, corrosion resistant, for pumps, valves, 10/7, p.85

U. S. Industries Inc.:
Open back inclinable presses added to Torc-Pac line, IE, 10/21, p.121
Production Machine: Adjustable stroke a press option, IE, 11/11, p.125
Production Machine awarded contract by Ford-Werke, automated press line, 9/2, p.35
Production Machine: HERF unit-high energy, IE, 11/11, p.116
Snyder charges automation cuts jobs, 10/14, p.44

U. S. Steel Corp.:
Columbia-Geneva makes thin tin plate, Pittsburg, 11/11, p.35
Duquesne Wks., Blast furnace with three bells lighted, 12/2, p.81
Duquesne Works: Fluxing materials move on conveyor belts at oxygen plant, 12/9, p.122
Duquesne Wks.: Oxygen computer installed, B, 7/1, p.26
Edgar Thomson blast furnace enlarged, 9/2, p.33
Farm market dev., dairy barn, etc., 9/23, p.53
Gary sheet-tin mill, automatic gage control and load shift equipment, 8/12, p.93
Gary tin plate mill will be computer controlled, 12/23, p.24
National Tube adds electric weld pipe mill, Lorain Wks., 7/8, p.30
National Tube installs huge rotary hearth furnace, Lorain Wks., 8/26, p.31
Organizational structure revamped, 9/23, p.17
Organizational change (editorial), keep pace with change, 10/7, p.15
S. Chicago Wks., vacuum degassing unit, 12/2, p.36
Stainless (special report), how to help customers sell products made from stainless, market development, advertising programs, 12/2, p.65
Strapping around packages, IE, 10/7, p.142
TC&I multimillion dollar program-facilities at Fairfield, Ala., 10/21, p.49
Vacation plan for salaried employees, 10/7, p.27
Vinyl coated steel sheet, 10/21, p.108

Univac: See Sperry Rand

Universal-Cyclops Steel Corp.:
Employees get antiproductivity edict, 8/19, p.28

Up-right Scaffolds:
Foldable scaffold, IE, 10/28, p.103
Locking device on storage rack, IE, 8/12, p.175

V

VR/Wesson Co.:
Formed, B, 9/2, p.33

VSI Corp.:
Buys Winttonics, B, 8/5, p.32

Vacuum Specialties Inc.:
Quench aids vacuum heat treating, IE, 11/11, p.118
Vacuum-inert atmosphere welding systems join exotic metals, IE, 8/5, p.100

Valeron Corp.:
Inserted blade cutters, IE, 10/28, p.103

Value Line Investment Survey:
1964 car sales forecast, 9/2, p.17

Variety Stamping Corp.:
Buys Auer Register, B, 9/23, p.35

Vascoloy-Ramet Corp.:
Combines with Wesson to form VR/Wesson, 9/2, p.33

Vendo Co.:
Cover pic, vending machines-components, 11/11, p.51

Visi-Trol Engineering Co.:
Carrousel type transfer chassis, IE, 10/28, p.106
Swiveling head vertical mill for cumbersome parts, IE, 10/7, p.135

Volkswagen:
Accelerates exports to U. S., moves by special ship transports, 7/8, p.102
Spends $19 million in U. S. for raw materials, tools, etc., 10/14, p.217

Von Karman Center:
Men on moon may get oxygen from rocks for rocket propellents, 11/11, p.72

W

Waber Tool & Engineering Co.:
Zip-Cut, high speed saw, IE, 10/7, p.136

Wagner Casting Co.:
New specialty foundry unveiling (modernizes by leasing equipment), 7/29, p.33

Wah Chang Corp.:
New molybdenum powder flows freely, dev. for plasma spraying, 10/21, p.117

Wales Strippit Inc.:
N/C punching, notching machine, 11/11, p.115

Walker Co., O. S.:
Ceramic magnet lifts, IE, 9/30, p.102

Walker Mfg. Co.:
Forms international div., 9/16, p.57

Wallace Supplies Mfg. Co.:
Bar bender, lowered height, IE, 12/23, p.77
Cutting unit, IE, 7/29, p.159

Ward Steel Co.:
Named distributor for Firth Cleveland Steels, 9/9, p.33

Warner Electric Brake & Clutch Co.:
Buys Beaver Precision Products, B, 12/9, p.53

Warner & Swasey Co.:
Add-on functions, N/C planer type drill, 7/1, p.86
Consolidates numerical control facilities, 7/1, p.26
Turret lathe machines 2600 lb forgings, IE, 12/30, p.76
Workholding capacity, new option on chucking automatic, IE, 10/7, p.138

Waterbury Farrel Foundry & Machine Co.:
Builds reduction strip mill for Calstrip, 12/2, p.33

Waterbury Pressed Metal Co.:
Buys Sheffco, B, 12/16, p.35

Watsco Inc.:
Fusionwelding under liquid, IE, 10/28, p.99

Webber Mfg. Co, Inc.:
Environment chamber shock tests parts, IE, 12/23, p.76

Weirton Steel Co.:
Coal injection report, 8/5, p.48

Weirton Steel Div.:
Vacuum degassing unit installed, 9/23, p.33

Weld Tooling Corp.:
Multipurpose carriage, Bug-O is boon to fabricators, 12/16, p.80

Welding Alloys Co, Inc.:
Dissimilar metals joined by solder, IE, 7/1, p.91

Wells Mfg. Corp.:
Bandsaw features, IE, 9/16, p.227

Wells & Sons Inc., W. F.:
Light series saw, IE, 8/26, p.113

Wesson Corp.:
Combined with Vascoloy-Ramet, 9/2, p.33

Western-Diversified Metals Corp.:
Formed, B, 9/23, p.35

Western Rust-Proof Co.:
Parkerizing 100, phosphatizing system, 11/25, p.97

Westinghouse Electric Corp.:
Ampgard motor controller, IE, 12/2, p.135
Automatic welding machine (Sharon) turns blanks into welded tanks, 7/29, p.92
Burnham president, 7/22, p.31
Clotworthy, cover pic (oceanography), 9/23, p.42
Computer for hot strip mill, Wheeling Steel contracts, 9/23, p.33
Cyanide copper plating, IE, 7/1, p.92
Dual Drive motor connects directly, IE, 7/15, p.114
Dynapak extrusions, thin wall shapes, 11/11, p.73
Electrogalvanize finish gets additive, IE, 8/5, p.103
Electron beam drills tiny holes, 8/5, p.58
Enclosed motors, resilient mounted, IE, 8/19, p.112
Friction tester, IE, 10/28, p.98
Fuel cell-space battery, 10/28, p.29
Gear motors designed for rugged service, IE, 9/9, p.144
Heavy duty motors handle mill service, IE, 10/14, p.237
Induction heat combined with fuel fired heat for strip annealing, 10/29, p.54
IUE-seniority issue, 10/28, p.28
Labor contract readied, 8/26, p.27
Material handling Motocylinder, IE, 8/26, p.114
Rapid transit supplier, 10/7, p.70
Scanning electron microscope dev., 9/30, p.30
Sharon plant, material handling facilities, B, 8/12, p.33
Solid state unit, AccurCon/200, IE, 7/8, p.113
Static speed drive, 60 hp, IE, 9/30, p.104

Wheelabrator Corp.:
Buys into Swiss firm, B, 7/29, p.35
Centrifugal wheel blast cleaner for core knockout, made for Gra-Iron Foundry, 12/23, p.31

Wheeling Steel Corp.:
Computer for hot strip mill, Steubenville (Westinghouse contract), 9/23, p.33
Continuous pickling line, Steubenville, O., 9/30, p.31
Strip galvanizing line (Cooke-Norteman process), 12/30, p.35

Whiri-Air-Flow:
Iron chip injector, IE, 10/14, p.240

White Sewing Machine Corp.:
Buys Shade Valve, B, 10/7, p.36

Whitney Mfg. Co., W. A.:
Modular gang punch, IE, 12/16, p.136

Wickes Corp.:
Buys Kux Machine, B, 11/25, p.51

Wilson Engineering Co. Inc., Lee:
Open coil annealing for steel-diffused chromium coating, 7/15, p.54
Outlook for European steelmakers, 11/18, p.121
Vertohort un't unveiled at AISE meeting, 9/30, p.30

Wintriss Controls Inc.:
Missing parts detector, 11/18, p.77

Woodward Iron Co.:
Joint operation with American Smelting, B, 7/29, p.35
Negotiates for TP&C's Coke plant, blast furnace in Tenn., B, 12/16, p.35

X

Xerox Corp.:
Buying Electro-Optical, B, 9/9, p.35
Buys Haloid Corp., 7/8, p.31

Y

Yale & Towne Mfg. Co.:
Automatic lift truck, IE, 10/21, p.189
Control for battery lift truck, IE, 7/29, p.150
Merging with Eaton, 10/21, p.49
Ram truck carries coils, IE, 7/1, p.83
Sideshifter added to lift truck, IE, 9/9, p.145

Yawata Iron & Steel Co. Ltd.:
Develops new steel (strength-weldability), WEL-TEN 100N, 7/15, p.31
Oxygen converter gas recovery process-cleaning system, 8/19, p.58

Yoder Co.:
Tube mill (for English firm) makes high pressure boiler tubes at speeds up to 200 fpm, 11/11, p.71

Youngstown Sheet & Tube Co.:
Adds annealing furnaces, Indiana Harbor, 12/23, p.25
Adds data processing to Ohio and Ind. works, B, 7/22, p.32
Amsted license to study and test pressure pouring, 7/29, p.25
Contracts for rolling mills, Indiana Harbor Wks., 8/19, p.28
Elects Williams exec. v. p., 7/22, p.27
Magnaflux builds dual billet test system, 10/28, p.30

Z

Zagar Inc.:
Turnbuckles made on production machine, IE, 7/1, p.89

Zeiss Inc., Carl:
Microscopes, IE, 10/28, p.98
Toolmakers' microscope, IE, 8/26, p.114

AUTHOR INDEX

Garrett, John, Goodyear Tire & Rubber Co.: How to stretch your rubber goods dollar, 7/8, p.59

Haggett, James E. and R. L. Smith, Norton Co.: How to find profit in abrasive machining, 9/16, p.126

Milhaupt, Thomas, Linde Div., Union Carbide Corp.: Cooled roofs may save steelmen buck a ton, 12/9, p.97
Schofield, Jack H., Fastener Div., United Shoe Machinery Corp.: Pull type rivets ease, speed light assembly, 8/19, p.63

Smith, Roderick L. and J. E. Haggett, Norton Co.: How to find profit in abrasive machining, 9/16, p.126

Smoke, Stephen D.: Latin steel, the tide is rising, 9/30, p.36
Where metalworking will grow in Latin America, 10/7, p.72

Solmssen, Harold K., German consultant with S. J. Rundt & Associates: German steel, its problems sound familiar, 8/12, p.99

Thielsch, Helmut, Grinnell Co.: Bargain hunters ambush sellers of quality welding, 7/22, p.48